CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

JUNE 1, 1998

SECTION ONE
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Should You Outsource Your ERP Operations?

Do You Have A Choice?

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Y2K Battle Plans

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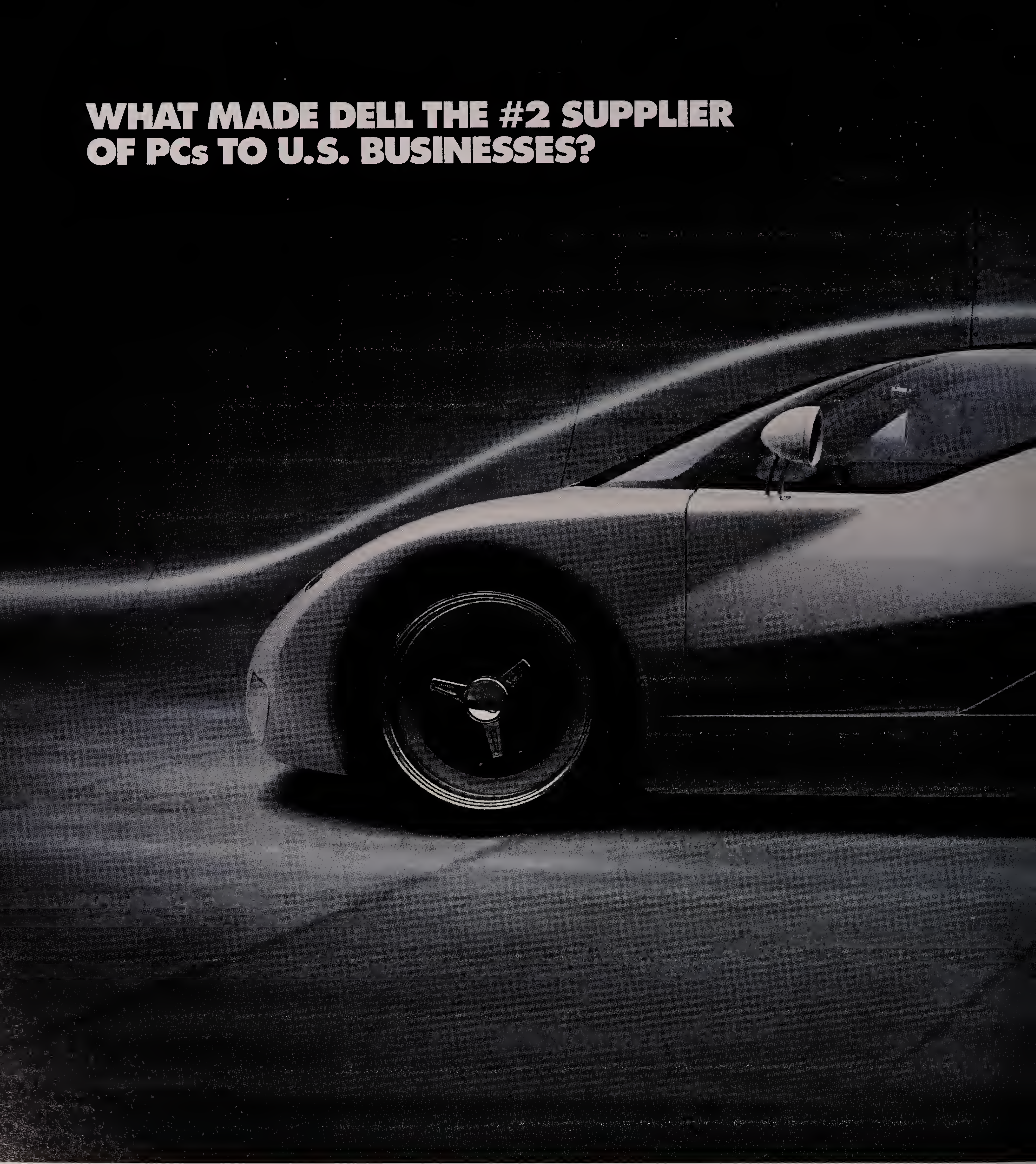
ESEC's Erwin Steinhauser discovered that finding and paying employees with SAP expertise is as difficult as scaling the Alps



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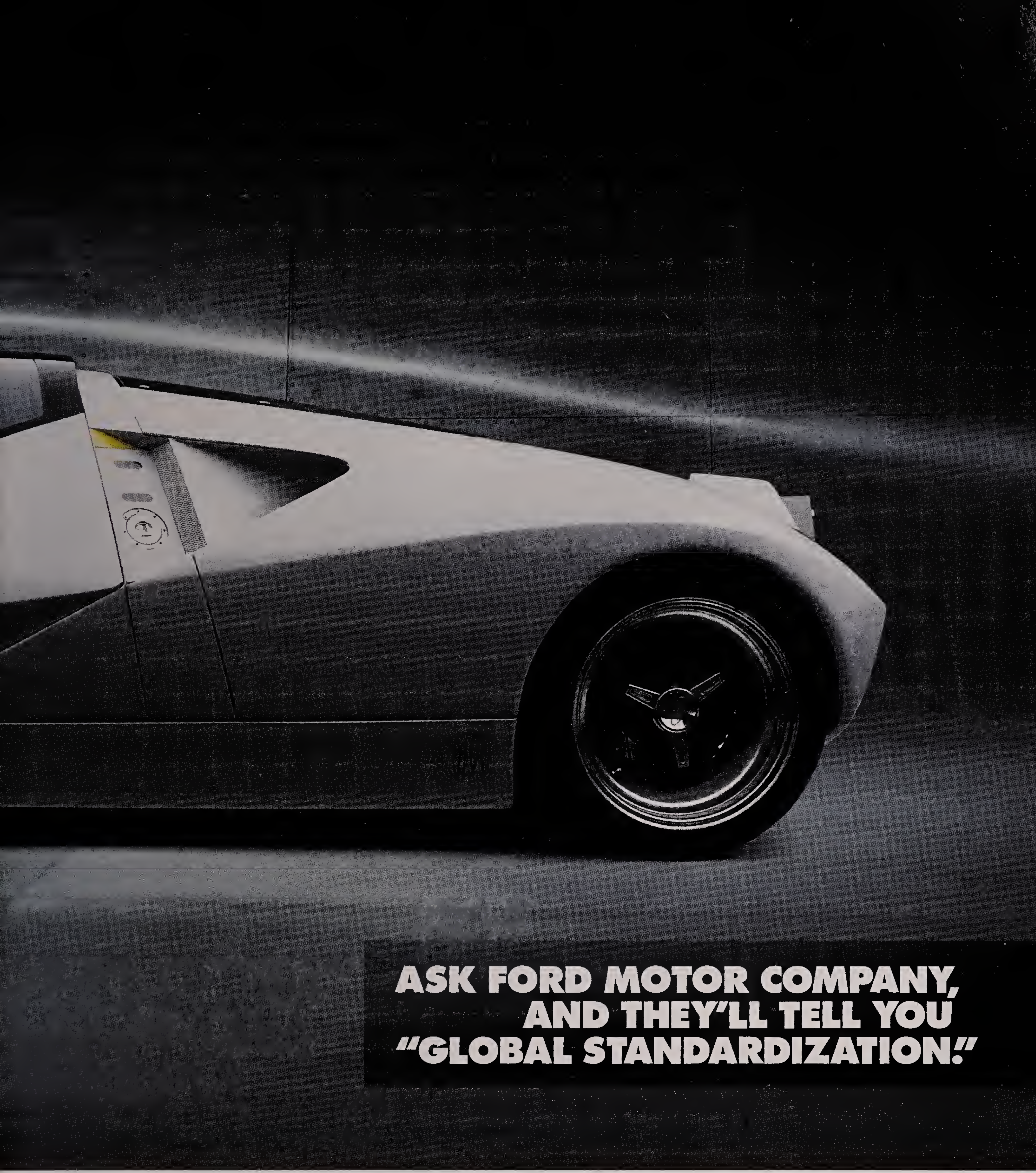

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CIO

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TOTAL COST OF OWNERSHIP Managing infrastructure costs has moved to join other hot action items—Y2K and the skills shortage—on the CIO's growing list of concerns. Is there a limit to how low they can go? Here's how to make sure your total cost of ownership is right for your business. *By Malcolm Wheatley*

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THINK TANK Although many companies are using customer data, few are turning it into knowledge. What's the problem? *By Tom Davenport*

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A detailed outsourcing contract let Erwin Steinhauser surmount ESEC's ERP operations problems.

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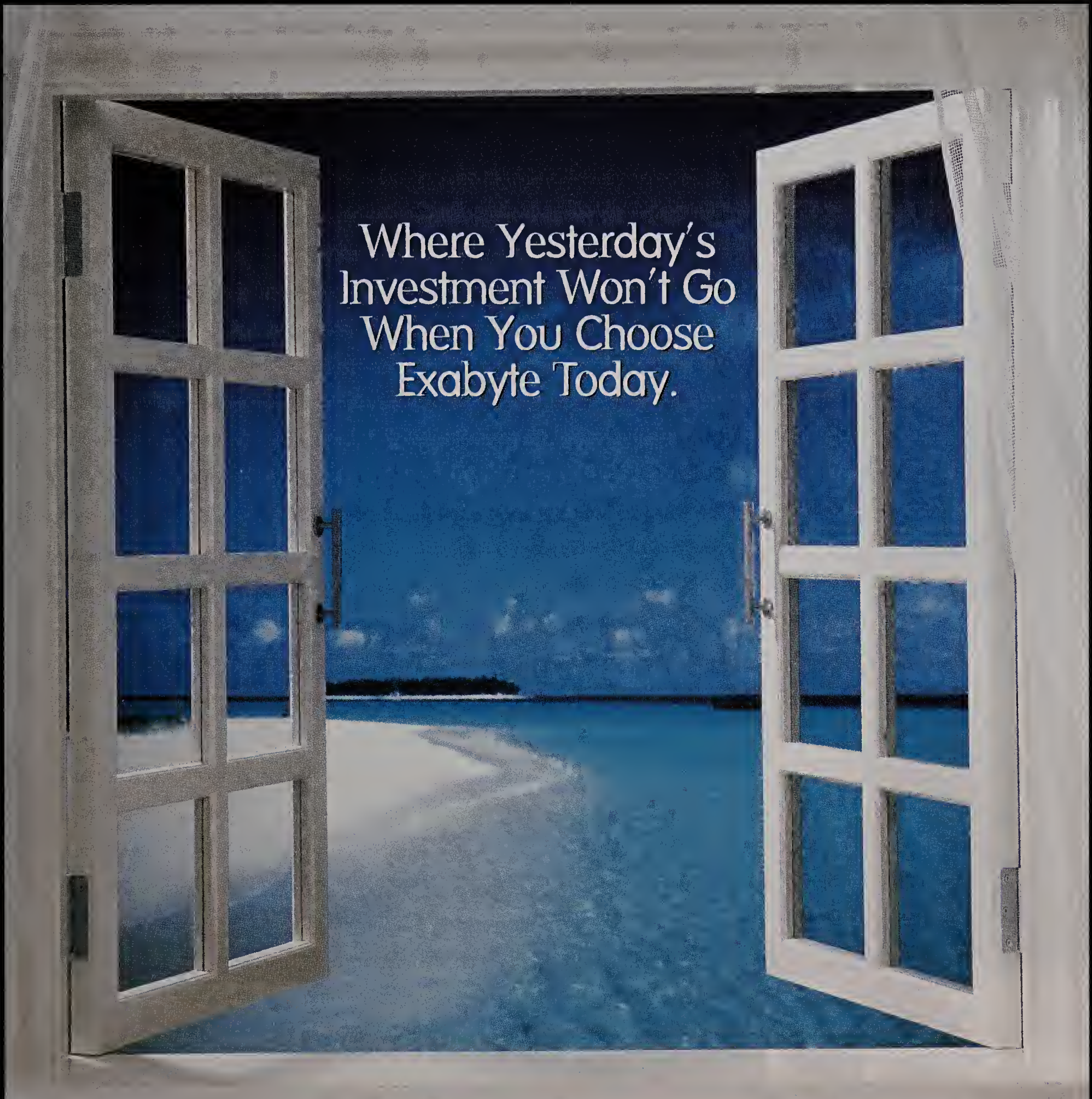
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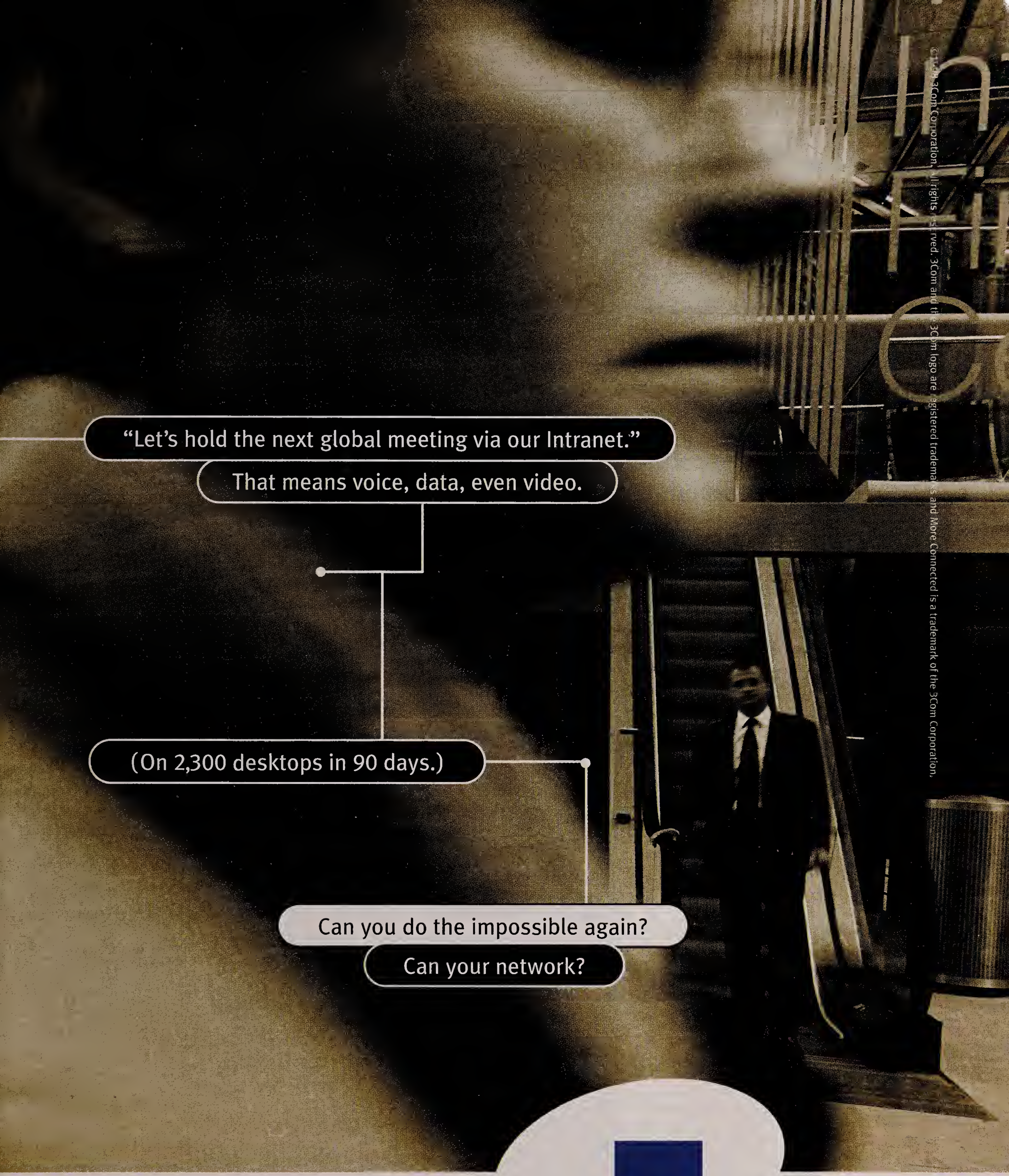
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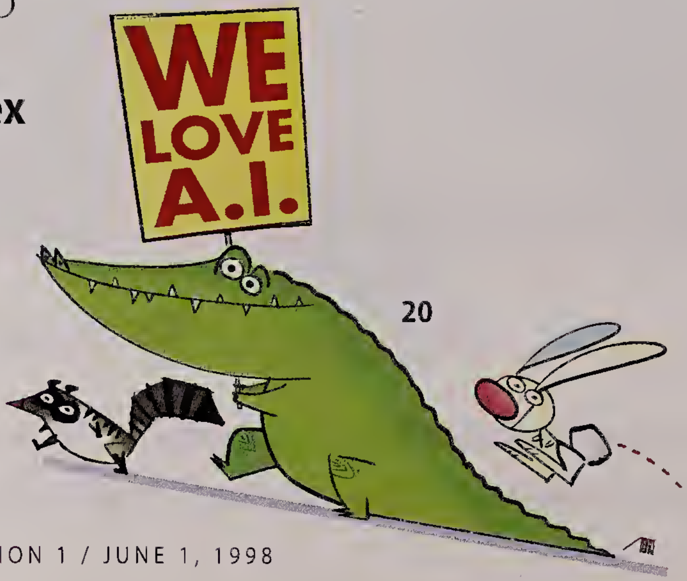

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ART AND TECHNOLOGY At the world's great museums, guardians of the past are meeting the technology of the future.

VALUE-ADDED PROPOSITIONS Some companies are deriving revenue from their own Web-based tools.

NETREPRENEURS WebRing tries to survive the transition from freeware to free market.

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GRAY MATTERS Web sites that collect information from children can follow their own rules or be forced to follow the FTC's.

CUSTOMER INTERFACE Marketing and IS need to bury the hatchet to work together on the Web.

POWER SOURCE Need speed? Try throwing a little cache at your server.

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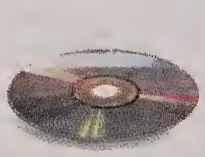

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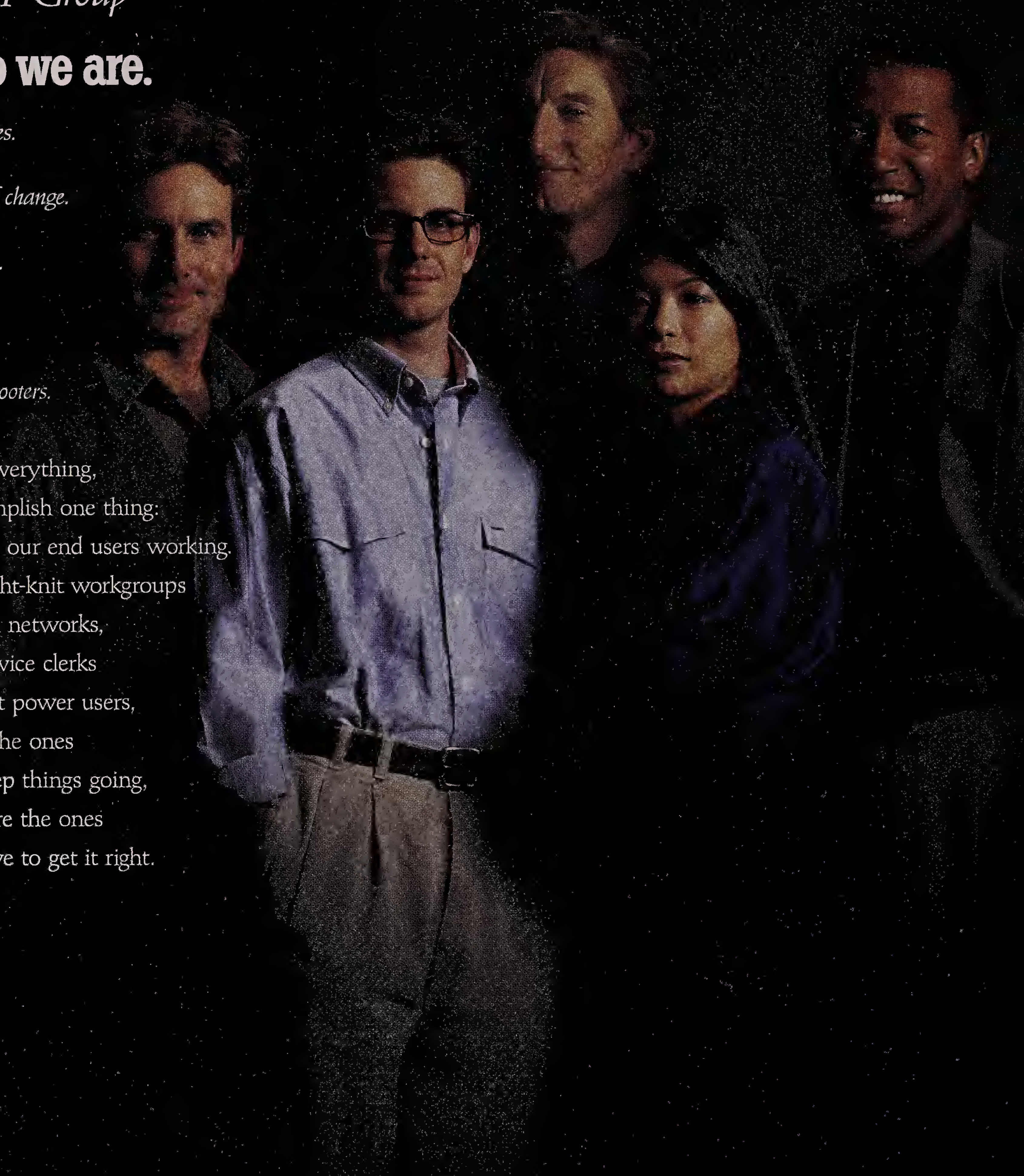

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In Box

LETTER FROM THE EDITOR, READER FEEDBACK AND HOW TO REACH US

Norman Matloff says there is no IT staffing shortage. In "Debunking the Myth of a Desperate Software Labor Shortage," a paper available on the Web at *heather.cs.ucdavis.edu/itaa.html*, the UC Davis professor writes, "Due to an extensive public relations campaign orchestrated by an industry trade organization, the Information Technology Association of America (ITAA), a rash of newspaper articles have been appearing, claiming desperate labor shortages in the information technology field."

Matloff believes that the so-called shortage is really just an attempt by the high-tech industry to raise immigration quotas and increase the number of younger workers to replace higher-cost mid-career employees.

Having devoted an entire issue of *CIO* to the IS staffing crisis ("Help Wanted Now," *CIO*, Dec. 15, 1997/Jan. 1, 1998), and writing this as I am the day before a presentation on the topic before an audience of 700 CIOs, I have something of a stake in the matter. While I believe Matloff has a point worth discussing, he goes too far, oversimplifies and fails to acknowledge the nonfinancial factors contributing to the selection of younger workers over older ones. Clearly, the ITAA has an interest in increasing the IT labor pool for its members and keeping costs as low as possible, but most employers also have an interest in having the best talent for critical work, regardless of age.

Based on hundreds of conversations over the past year, I have no doubt that attracting and retaining competent IT staff is now a major challenge for CIOs in all industries. In 11 years of looking at top IT issues and trends, the staffing problem never made it to the radar screen. Now it is among the top three issues.

While I believe age bias exists in IT, its reasons go beyond economics. Younger workers typically cost less than older workers in benefits and retirement packages. But if you ask the people doing the hiring (off the record, of course), they'll say the reason they prefer younger workers is that they are more flexible and adaptable to change. Having grown up in the Information Age, they are comfortable in a technology-enabled environment and ready to come up with innovative, groundbreaking solutions—a critical competency in this fast-changing environment.

Matloff oversimplifies the situation. But he also makes an important point. IT managers feeling the pinch of the labor shortage should be more cautious about dismissing older job applicants out of hand. To pick a younger worker over an older one because he or she learns more readily and is more adaptable to change is legitimate. To do so without ever interviewing an older candidate is age discrimination. In this environment, that's not only wrong, it's bad business.

If you'd like to air your opinion on this matter, write to *letters@cio.com* or post a comment in our online forum at *www.cio.com/forums/staffing/*.

Abbie Lundberg

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UPGRADE INFLATION

Tom Davenport is on the mark, as usual ["Cheap Is Beautiful," *CIO* Section 1, March 1, 1998]. I would suggest that most corporate environments are not reacting to Pentium envy, as Davenport suggests, but rather to software psychosis. Just wait until some high-level business manager (or, more probably, his or her secretary) receives a digital version of a conference pitch that just happens to be in Microsoft PowerPoint '00 when the internal corporate pitchmeister standard is Lotus Freelance '97. Or watch what happens when the CFO gets an e-mail attachment in the newest PDF format that supports animated graphics. See how fast the purchase requests flow.

I would suggest that there will always be customers itching to purchase the latest and greatest software as long as software vendors keep providing products with new bells, whistles, animation and links. Others will follow just to show their peers that they also are savvy. If the cost of maintaining "savviness" is less than the aggregate cost of paying one to two people, who will really say no?

Dave Eakin
Director, Client/Server Systems
Naval Inventory Control Point
Mechanicsburg, Pa.

Bravo! Thank you for boldly saying what I have been telling my users for many years. There is such an expectation of perpetual change in IT today that IT managers who dissuade the "upgrade brigade" begin to seem odd, lazy or perhaps incompetent. That's because rarely do you find a "whatever works" user who would classify himself that way—everyone thinks he needs more power. Perhaps we can form an appropriate technology support group!

Candace Koogler
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Our consulting firm took over the management of the IT department in a midsize multinational company for four years to clean up its management. Among other things, we installed chargeback for IT services and eliminated departmental ownership of PCs. When we needed more PCs, we would analyze user requirements to determine how we could shuffle them around to maximize their use. This usually meant that users lost or gained more powerful machines for optimal use. We took advantage of PCs with pre-installed software to upgrade users who needed to exchange documents with others. Along the way, we canceled corporate software licenses and maintenance contracts for upgrades, saving money, upgrade aggravation and training costs (we held on to software licenses for concurrent use long after Microsoft canceled the concept). We were able to do these things only with strong CEO support, and it took us six months to pry users from their PC ownership and another year to show them the benefits.

Although I strongly believe in appropriate technology (in a country like Mexico, we need to apply it because of limited funds), I also believe in appropriate (and timely) upgrades. Thanks for spreading the word!

Carlos Ross
Senior Partner
Proa Consultores
McAllen, Texas
ross_proa@mail. cmact.com

Tom Davenport touches on a very important issue in addressing the ever-increasing cycle of more horsepower, whether for the hardware or the appli-

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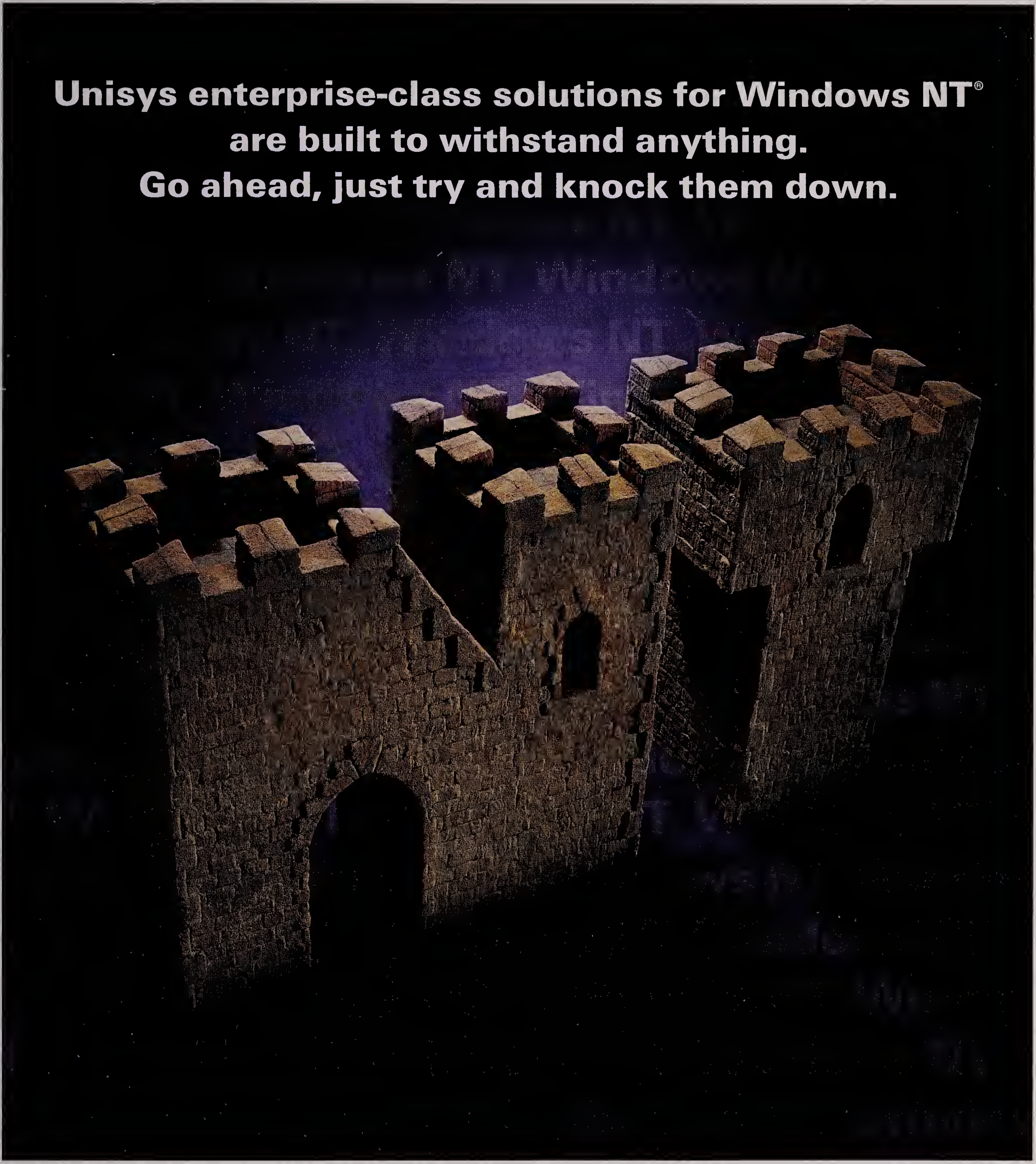

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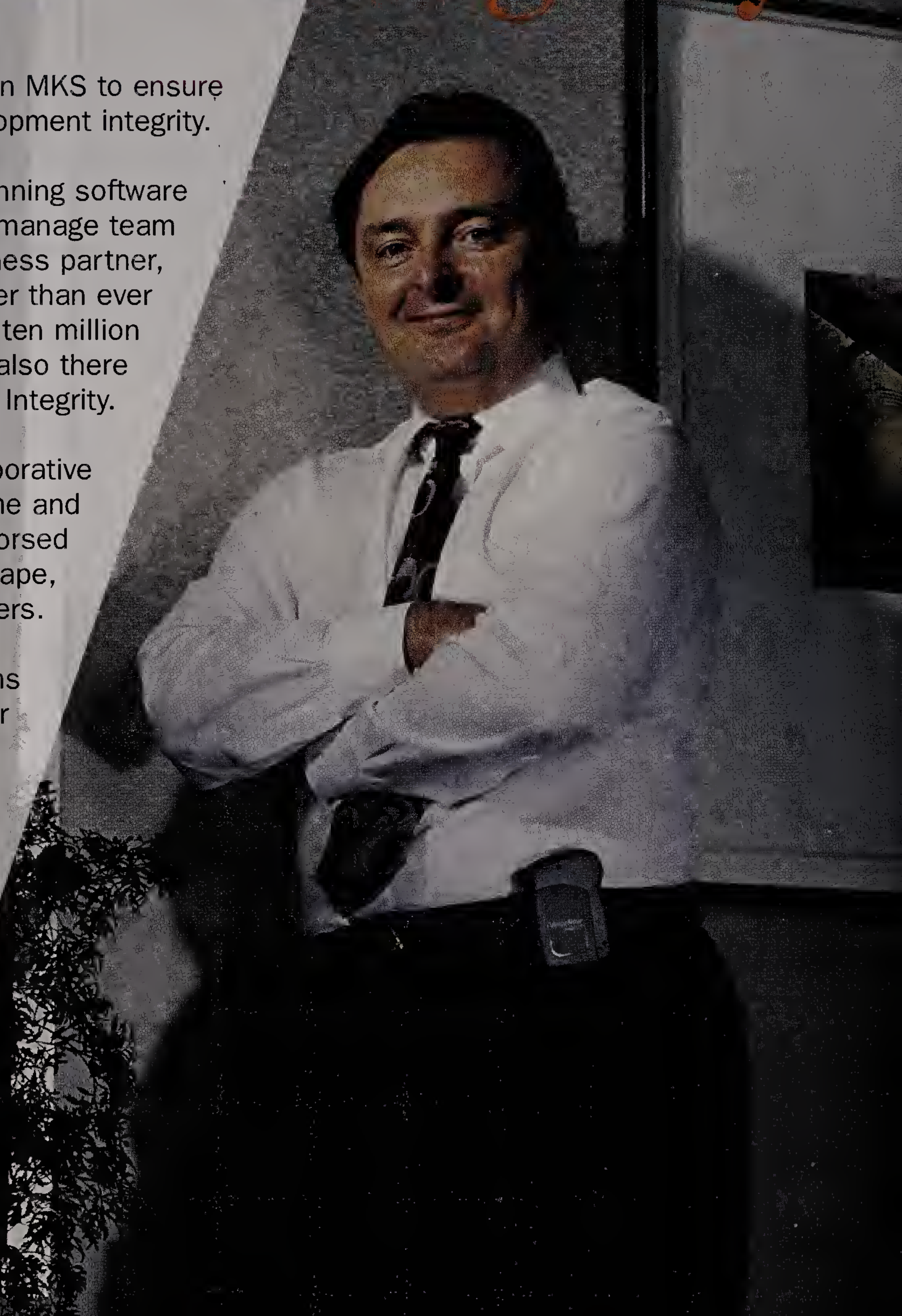

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Ross Holman — CIO — PageNet

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In Box

cations it supports. I agree that we all too often deploy much more than is needed to do the job. I have witnessed the rush to install top-of-the-line minicomputer systems where only a small percentage of the system's capability was ever put to use. Then we moved on to the standalone PC, LANs and WANs where much of the same has continued but at an even faster pace. Perfectly acceptable hardware has been retired, not because it no longer met the requirement but because vendor support evaporated or the next wave of applications was either incompatible with previous versions or could not be supported on the existing base. CIOs and vice presidents must bring some kind of rationale to this madness and stop going with the flow.

However, I strongly disagree with Davenport's summation that there is no evidence that spending more on IT leads to competitive advantage, higher profits and shareholder value. Considerable evidence to the contrary, much of which is clearly outlined in *CIO*'s archives, shows that both private and public organizations have benefited immensely from their investments in IT. One that closely parallels my own organization, is Schlumberger Ltd. Its migration from X.25/X.400 to pure TCP/IP-based applications has paid off handsomely. Similarly, it does not take a leap of faith to envision cost savings in the hundreds of millions of dollars at the State Department as we shift to intranet-based applications to meet our worldwide core requirements. These savings could not even be anticipated without the State Department's IT investment in its A Logical Modernization Approach (ALMA) project. Similar examples of ROI exceeding upfront costs exist throughout corporate and government environments.

I would like to see widespread acceptance of many of Davenport's suggestions, but I take umbrage at the insinuation that increased IT is akin to money down the drain.

Terrence K. Williamson
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CLARIFICATION In "The 'What If' Game" in Section 1 of our March 1, 1998, issue (Page 56), we misrepresented a source's opinion on contingency planning and testing for the upcoming Y2K bug.

David Mounce, vice president of production operations at Options Clearing Corp. in Chicago, has done extensive contingency planning, and he has been doing compliance testing for the past two years.

His organization is also participating in the Securities Industry Association's industrywide testing to ensure its readiness. We regret the misrepresentation.

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Publisher's Note

The United States is the world's most technologically advanced nation. Nothing new there. Are you aware, however, that 58 percent of all American households still do not have a personal computer?

Growing up in New Jersey in the early '60s, the major decision my parents made with New Jersey Bell was which color telephone to choose: black, red, beige or pea-soup green. New Jersey Bell basically gave away the phone to make money on our family's usage.

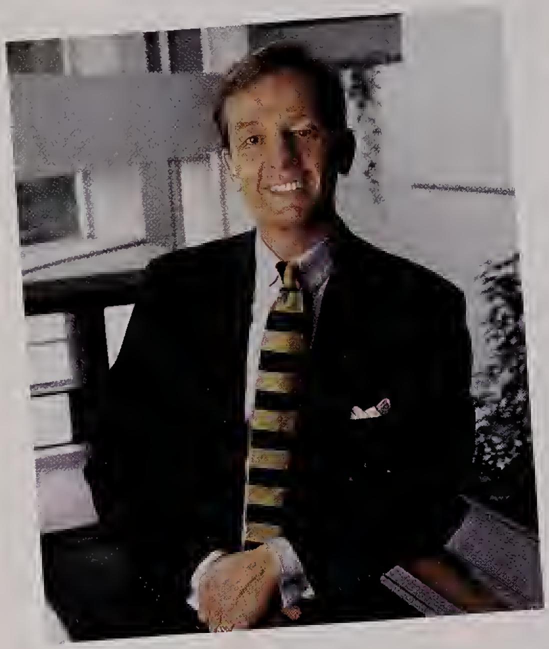
PHOTO BY WEBB CHAPPELL

Fast forward to the '90s. PCs with monitors are being sold for less than $900. Network computers go for under $500. The telecommunications industry is spending billions in a mad rush to sign on consumers for Internet services, including Internet telephony.

With the price of personal computers dropping dramatically, a PC vendor could make money selling hundreds of thousands of machines to, let's say, a telecommunications partner.

In this arrangement, the telecom provider would lease the computer to a consumer in a 48-month lease for $12.50 per month. My math puts a 20 percent margin on those numbers. The computer vendor keeps 95 percent. Support and service? No problem. At these prices the consumer gets another machine if the one he is using breaks. Shipping and handling costs of breakage are covered by special warranty clauses entered into when the consumer signs on to the deal.

The big payoff is Internet usage fees. And, in the future, Internet telephony. Just as with the computer leasing option, the customer must agree to use the Internet service provider for a 48-month lease. The telecom vendor would price monthly Internet usage at $10. The Internet service provider keeps 80 percent of the margin over cost of providing the service.

Eighteen months ago this idea would not have worked. But times have changed. Computer prices are dramatically lower. The Telecom Reform Bill has fostered more competition in the telecommunications industry. Consumers are in the driver's seat.

As we head into the 21st century, the IT industry, led by CIOs, has to develop innovative ways to reach out to the digitally disenfranchised. Failure to do so is not an option. But doing so represents an enormous business opportunity.

What can CIOs do to lead this national digital crusade? Got an idea of your own? What do you think of mine? Send me your comments.

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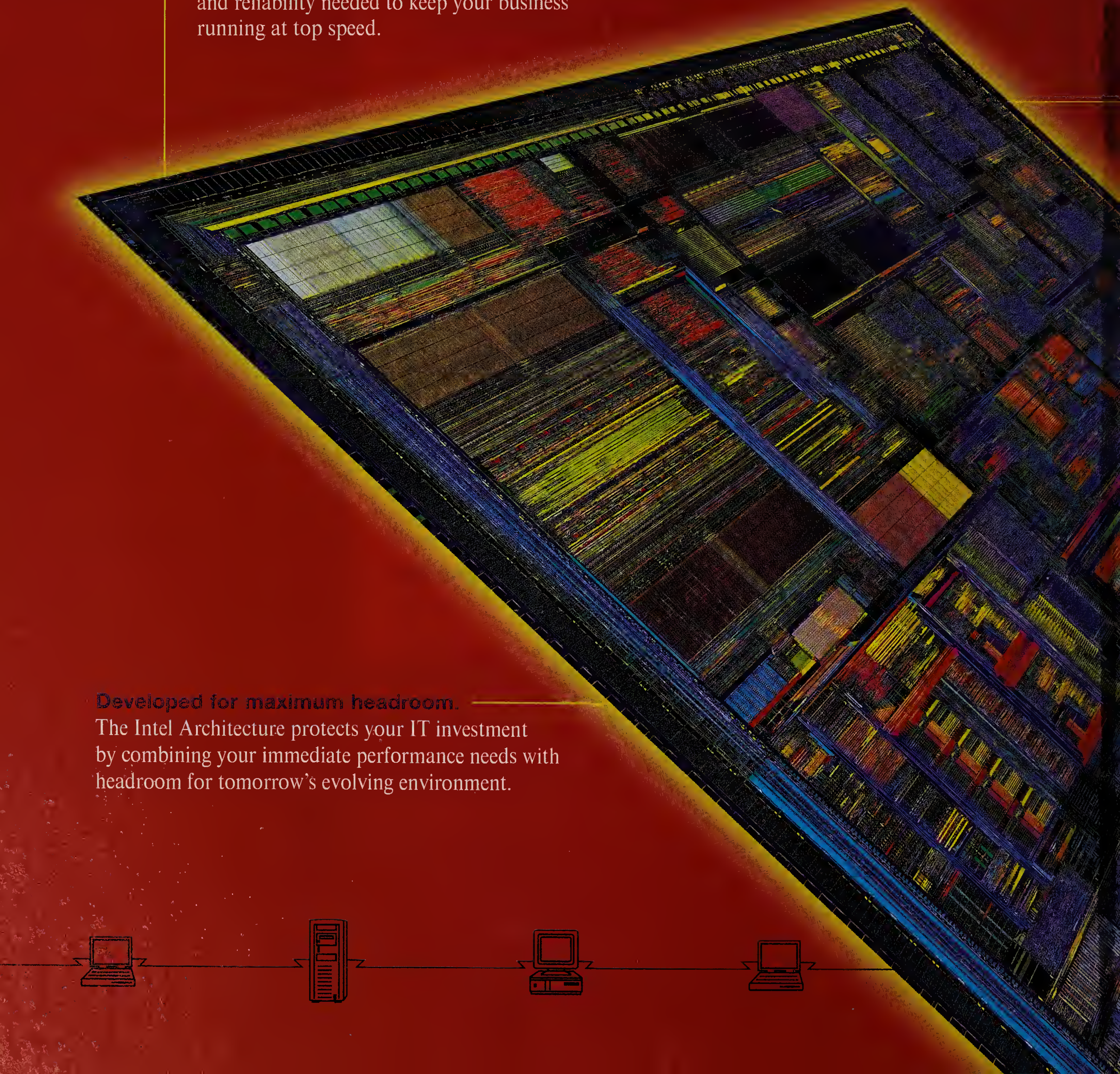

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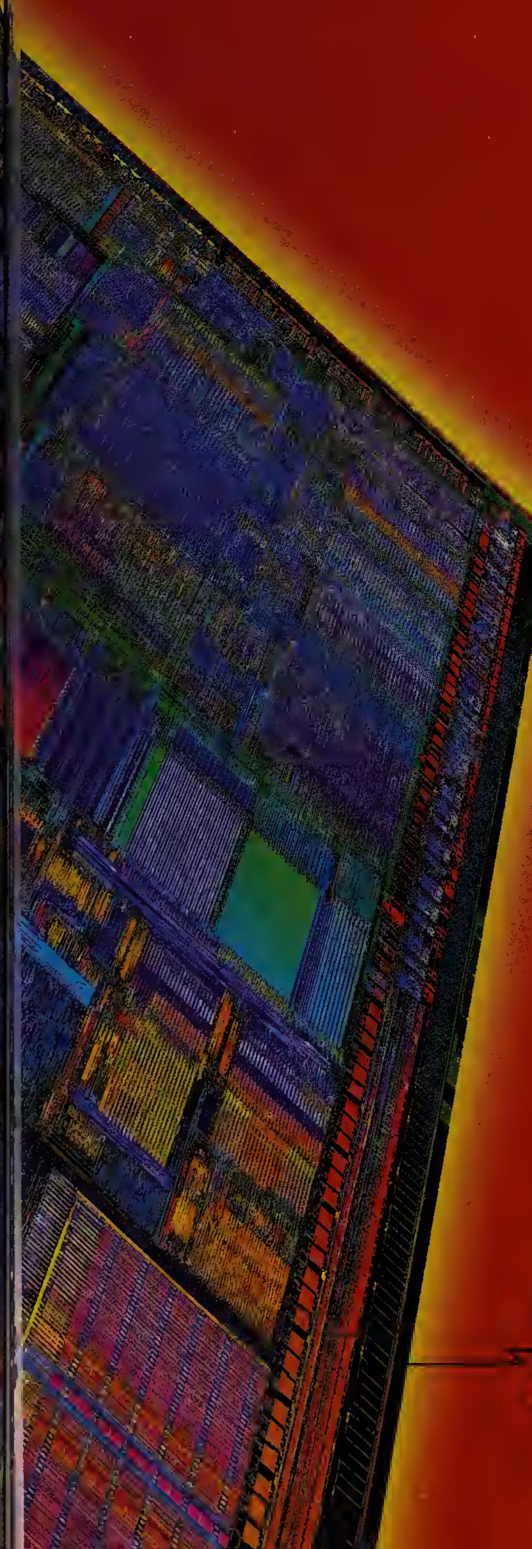

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Trendlines

NEWS, INSIGHT, HUMOR, REVIEWS

Edited by Katherine Noyes

A Real Lifesaver

PHARMACEUTICAL TESTING If animals could speak, they would surely praise artificial intelligence. A new application of the technology in the pharmaceutical industry could reduce the number of animals used in testing drugs.

Pharmaceutical companies must test promising compounds on animals before the drugs can undergo human trials and eventually go on the market. Such compounds are developed by the thousands, but only about 2 percent ever make it through all the testing. The others turn out to be toxic, too expensive or just plain ineffective in humans. Meanwhile, drug companies have spent millions of dollars over years of testing and countless animals have lost their lives.

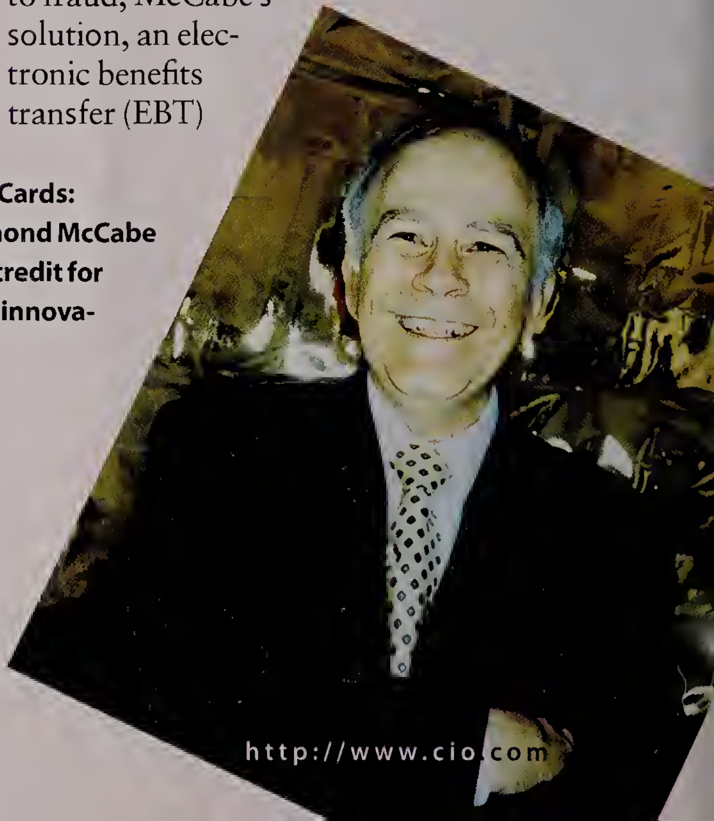
Today, artificial intelligence promises to improve the process, thanks to a recent agreement between Multicase Inc., a Cleveland-based supplier of AI software for drug development, and the FDA. The FDA is using Multicase's MCASE software to develop toxicity database modules, using data from past animal tests, that predict the potential toxicity of new compounds based on their chemical structures—without the use of lab animals. The aim is to let drug makers evaluate the potential toxicity of candidate drug molecules early in the process, says Gilles Klopman, president of Multicase. Multicase will market the resulting software, which will comprise a series of sophisticated expert systems and databases. A system to evaluate carcinogenicity is currently available; other releases are expected this fall, Klopman says. Prices range from $50,000 to $75,000.

So when a drug maker identifies a new compound, it will be able to submit its structure to the software, which will then predict whether the compound is likely to cause birth defects in animals, for example. If the probability is high, the compound could be abandoned without extensive testing. When no problems are predicted, the compound will still need to undergo some animal testing under current law, but the hope is that the overall amount will be significantly reduced, Klopman says. For the pharmaceutical industry, that could mean big savings in both testing costs and time-to-market. For lab animals, it's just plain good news. ■

IT's Shining Lights

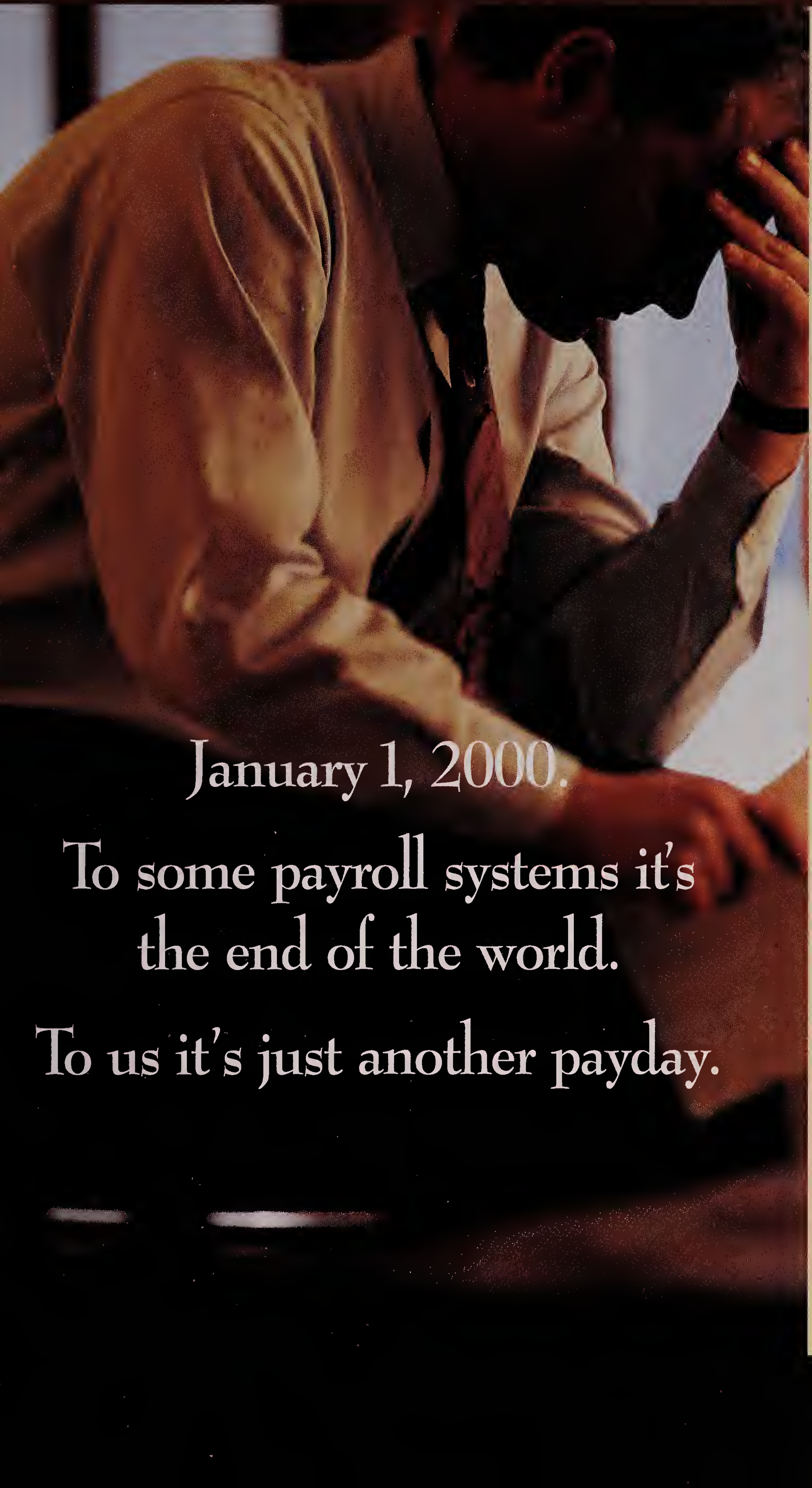
AMS AWARDS That dull thud you hear is the rule book being pitched overboard. Think something can't be done? Think again. The eighth Awards for Achievement in Managing Information Technology celebrate once again those determined IT managers who won't take no for an answer. The awards, cosponsored by American Management Systems and Carnegie Mellon University's Graduate School of Industrial Administration, recognize individuals who have made outstanding contributions to their organizations—and often their industries—through effective use of information technology.

Take Raymond McCabe, special assistant to the State Comptroller of Massachusetts and one of four Gold award winners this year. Boston-based McCabe's award recognizes his achievement in providing Massachusetts' public assistance recipients with plastic ID cards equipped with a magnetic stripe in place of paper food stamps and cash-assistance checks. Whereas traditional methods of welfare distribution are costly and subject to fraud, McCabe's solution, an electronic benefits transfer (EBT)



Gold Cards: Raymond McCabe gets credit for his IT innovation.

ILLUSTRATION BY BOB STAAKE / PHOTO BY FURNALD / GRAY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system, has not only minimized these problems but also eliminated the conspicuous social stigma felt by recipients.

Various states have attempted to implement EBT, some as long ago as 1982, but most failed. Such systems have always been closed, says McCabe, meaning that they required special terminals to be installed in shops, and recipients were required to use their benefits within the state of origin. Defying that traditional approach, McCabe set out to construct Massachusetts' EBT system around existing ATM and point-of-sale (POS) devices.

His 20-year banking background helped him persuade financial and commercial institutions to modify their devices to support public benefit transactions. Savvy negotiating skills also came in handy when he created a partnership among the six New England states and New York through which they would jointly develop and deploy the network. What's more, McCabe was keen to take advantage of this coalition to extend the network across state lines—public assistance recipients frequently move to take temporary or seasonal jobs and may cross state borders to take advantage of opportunities in another state.

Massachusetts' EBT network is now delivering benefits for more than 200,000 households across the state, distributing more than $1 billion in public assistance. The EBT network costs the state 33 percent less than paper food stamps and checks, at an annual savings of more than $1 million, says McCabe. But that's only part of the picture. Benefit recipients gain too, and not just if they happen to cross state lines. Recipients of public assistance can now pay for assistance-eligible goods such as food in the same transaction as ineligible items. "Not only do people get service 24 hours a day, 7 days a week," says McCabe,

18 MONTHS
Y2K
COUNTDOWN

Risky Business

When you take a trip, travel insurance covers your costs should you fail to reach your destination. But will Y2K insurance cover the cost of your journey between here and the year 2000 should you fail to reach your remediation? Don't think about it too long—by the end of the summer, you may not even be able to insure yourself against Y2K catastrophe.

We suggest you sit down before reading the cost of the premiums. Aon, a Chicago insurance broker, sells its ARM2000 starting at $3 million; and AIG, of New York City, offers its Millennium Insurance starting at 65 percent of the amount of insurance, with a limit of $100 million (yes, that's $65 million, although some of that is refunded "if losses come out favorably"). If you ask us, "favorable losses" sounds like an oxymoron. And AIG will stop offering the policies after August.

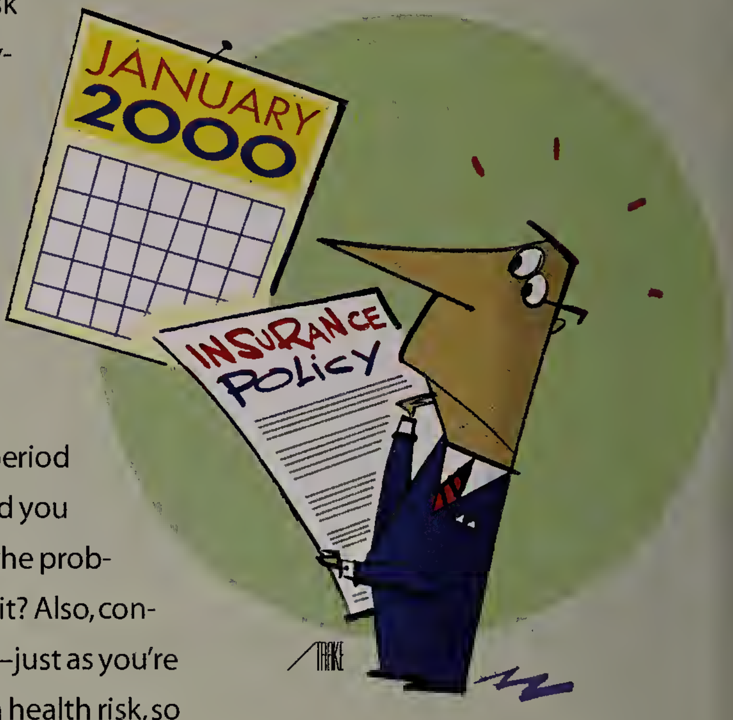

ILLUSTRATION BY BOB STAAKE

All of the companies require an audit of your Y2K programs, both technical and legal (for more on Y2K legal issues, see "Keeping the Lawsuits at Bay," *CIO* Section 1, May 1, 1998). The question is, in this harried period of limited staff, money and time, would you rather focus your resources on fixing the problem or on protecting yourself against it? Also, consider the likelihood of uninsurability—just as you're unlikely to get life insurance if you're a health risk, so you're unlikely to qualify for Y2K coverage if you represent a high risk for lawsuits.

Still, experts recommend you look at your business liability policies, including those covering management liability (generally called D&O, for directors and officers), professional exposure (E&O, for errors and omissions) and business interruption. "Smaller companies are going to be surprised by how their insurers respond if they believe they have [Y2K] coverage," says David Schaefer, vice president of Armfield, Harrison & Thomas, a Leesburg, Va.-based insurance broker. Schaefer is working with the Information Technology Association of America to provide Y2K coverage to what he calls "middle-market" companies—those with revenues between $10 million and $2 billion. AH&T is locking customers into three-year policies without Y2K exclusions for coverage through the year 2001.

Nonetheless, Schaefer expects that many insurers will cut off their policies by autumn, and he anticipates a grim future for insurance companies: "There's $296 billion in total policy holder reserves available to pay claims, and losses and litigation from Y2K in North America could exceed $1 trillion, according to Lloyd's of London. The question becomes, Is this an insurable event?"

–Howard Baldwin

On Our Web Site

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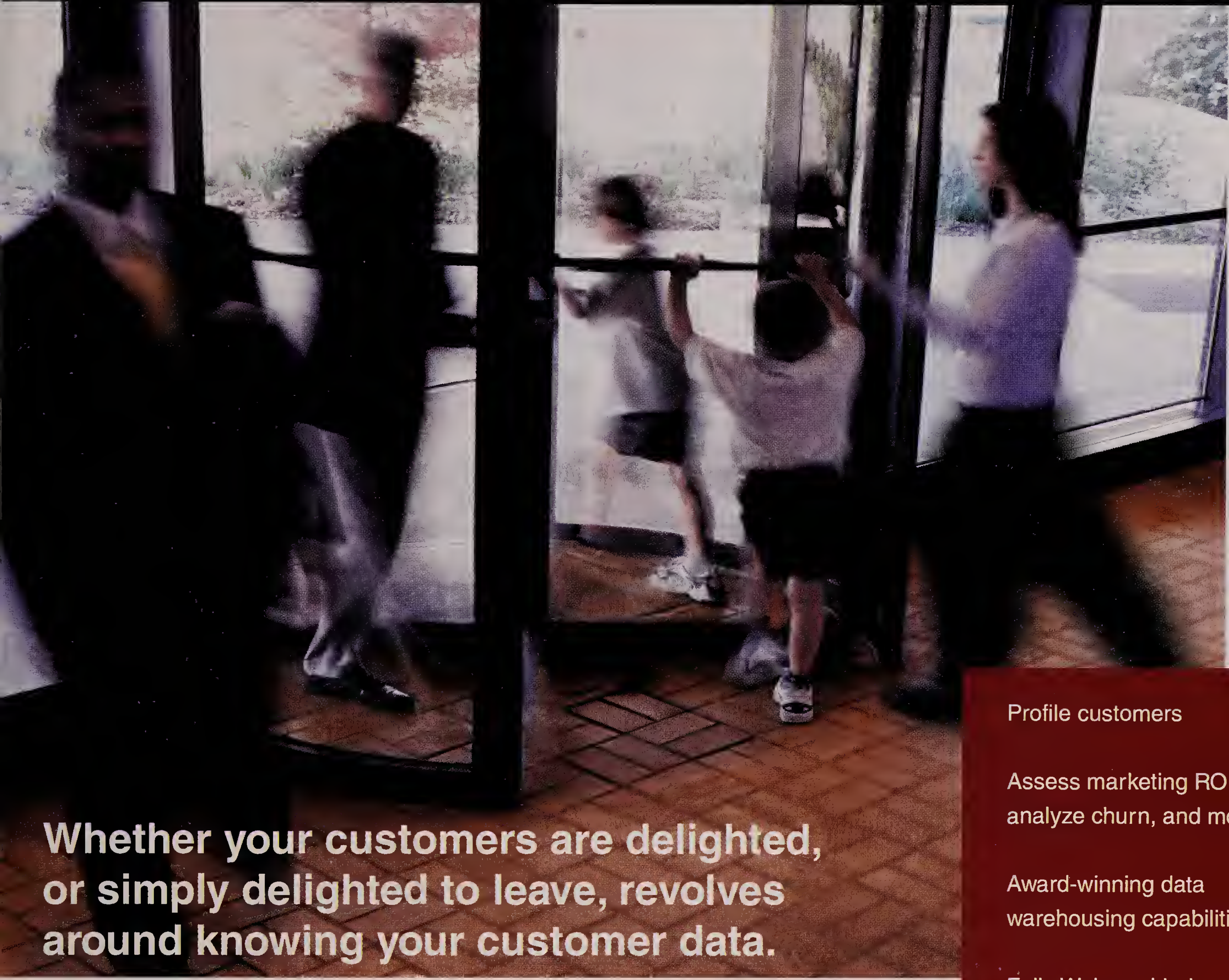
To read *CIO*'s other Y2K stories or to find other Y2K resources, visit *www.cio.com/forums/y2k/index.html.*

Customer Relationship Management



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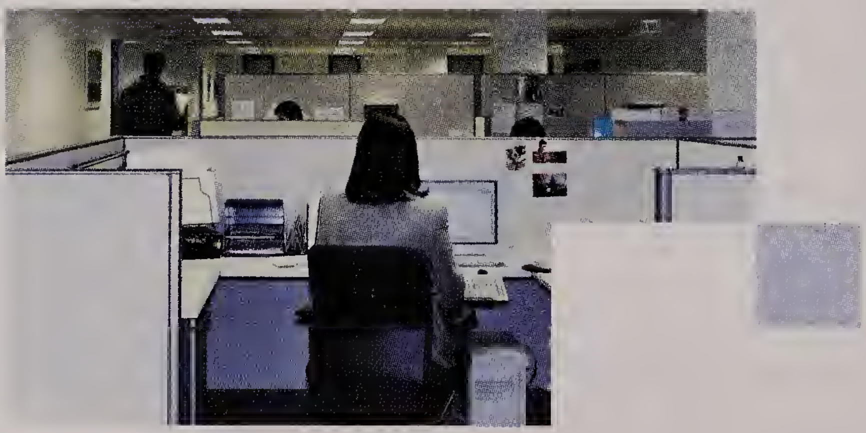

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"but there's less of a downtrodden look about it. If you were standing behind someone at a checkout, you'd never know they were on welfare."

The other Gold award winners this year were Nicolas Kauser, executive vice president and chief technology officer at AT&T Wireless Services Inc.; Robert L. Molino, executive director of procurement for the Defense Logistics Agency; and Michael J. Zeitlin, portfolio manager of integrated reservoir information and visualization in Texaco's Exploration and Production Technology Department. This year's Silver award winners were Richard W. Hankins, vice president of AT&T Service Delivery Systems Business Markets Division; G. Ward Keever, CIO for the University of Pennsylvania Health System; and Richard E. Machol, Operations Technology Center Vice President Network and Computing Services for AT&T. For more information, visit *www.amsinc.com.*

–Malcolm Wheatley

OVERHEARD

> "Bandwidth is going to be the silicon of the 21st century."
>
> ***–Gigi Wang***
> **Senior Vice President**
> **International Data Corp.**

SOURCE: IDC'S DIRECTIONS 98

Findings IT Leadership Challenges

CIOs from some of the largest organizations in the land are feeling the pain of the staffing shortage more acutely than they were one year ago—and their discomfort is exacerbated by the inexorable march toward the year 2000.

That was perhaps the most striking finding to emerge from a survey of 43 top- and second-tier IT executives who attended CIO Communications Inc.'s fifth annual Enterprise Value Retreat in February. Representing organizations with average annual revenues of $5.9 billion and average 1999 IT budgets of $52.7 million, the respondents were asked to identify their most pressing current challenges.

Each year, CIO's Enterprise Value Awards ceremony and dinner honors recipients for their achievements in demonstrating enterprisewide IT benefits. Close to 70 percent of this year's attendees were CEOs, CIOs, CFOs or vice presidents of their respective organizations. (For more on the retreat, see "This Is the Winter of Springs' Discontent," *CIO* Section 1, May 1, 1998.)

It seems more than coincidental that staffing issues rose to the number-one challenge from number five in 1997 at the same time that the millennial date change leaped from nowhere to number three (see chart). Meanwhile, the scant attention being paid to forward-looking initiatives such as serving a global community and electronic commerce support the impression that many CIOs are too caught up managing crises to concentrate on exploiting opportunities right now.

For more information about the survey, visit *www.cio.com/eva.*

–David Pearson

Top 5 Woes for CIOs

1998		1997
Recruiting, hiring and retaining quality technical staff	1	Managing and embracing change
Gaining support of managers/Aligning business & IT strategies	2	Implementation issues
Year 2000 problem	3	Cost control and justification/funding
Managing organizational change/Network growth	4	Training/reskilling IT professionals and staff
Keeping pace with changing technology/upgrades	5	Recruiting and retaining quality IT staff

SOURCE: CIO COMMUNICATIONS INC.

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Trendlines

Spies Like Us

NATIONAL INTELLIGENCE The CIA may not be ready to give away state secrets, but the notoriously tight-lipped agency is now offering information about itself on its new home page for kids. Curious young agents-to-be can learn about the CIA's illustrious history and notable heroes (even heroines—like the American Revolution's agent 355, whose identity is still a secret); experience life in the canine corps through the eyes of Bogart, a yellow Lab and retired member of the Security Protective Service; and find out the answer to the elusive question, "What is intelligence?" The site's geography section has a series of global trivia questions ("The Arctic Circle passes through Greenland and what six other countries?"). There's also a link to the CIA's World Factbook.

But parents, make sure your kids don't get too creative when surfing the site. Note the stern warning on its first page: "Unauthorized modification of any information stored on this system may result in criminal prosecution." Take your offspring to the CIA via *www.odci.gov/cia/ciakids/safe.html.* ■

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FLASHBACK

10

Years Ago In *CIO*

June 1988

CIO
THE MAGAZINE FOR INFORMATION EXECUTIVES
FRITO-LAY'S SNACK ATTACK
HEALTH CARE'S TECHNOLOGY TRANSFUSION
Lay's

Much hay has been made—particularly in these pages—about the current paucity of skilled IT workers (see, for example, "Top 5 Woes for CIOs," Page 26), and many observers point ominously toward the dwindling number of college students who express interest in computer science careers. But the real news is that this student disinterest isn't news.

A June 1988 Trendline item focused on an annual UCLA study that tracked a sharp decline in the number of college students interested in computer science careers. From a peak of 8.8 percent of all college students surveyed in 1982, interest had decreased to 2.3 percent as of September 1987. As a result of this trend, the Boston chapter of the Society for Information Management (SIM) embarked upon a campaign, aimed at the high school level, to whip up interest in IT careers.

What do UCLA and SIM report 10 years later? The good news is from UCLA. This past fall the university conducted its 32nd annual survey of 350,000 incoming college freshmen at 665 of the nation's two- and four-year colleges and universities. When asked to choose probable careers, 4.5 percent of all students selected "computer programmer or analyst"—up just over two percentage points from 1987's 2.3 percent. But put that in context: Computer science ranked seventh from the top of 44 career options listed on the '97 survey—and the top two vote-getters were "undecided" (11.9 percent) and "other career" (10.3 percent). Numbers three and four were "engineer" (7.7 percent) and "business executive" (7.4 percent), which can also be considered potential IT career paths.

The bad news: While UCLA's survey numbers rose, SIM's IT careers campaign fell flat. Jerry Miller, associate professor of competitive intelligence management at Simmons College's graduate school in Boston, cochaired the Boston SIM chapter's outreach program, which intended to bring IS executives and high school students face to face. "But we met with alarmingly poor results," Miller says. The problem? "High school teachers didn't seem to want us to come into their classrooms." In the early '90s, SIM representatives contacted Boston-area schools, offering guest lecturers, career counseling and curriculum advice. But the overtures were roundly ignored. "It was almost as if academia was saying, 'Professionals, stay away,'" Miller says. "It was frustrating."

The Boston SIM chapter subsequently discontinued its outreach program. Still, if other professional organizations have enjoyed greater—heck, any—success reaching out to local high school and college students, *CIO* would welcome information about the efforts. After all, if the past 10 years have proved anything, it's that student interests rise and fall, but the need for skilled IT workers only increases.

–Tom Field

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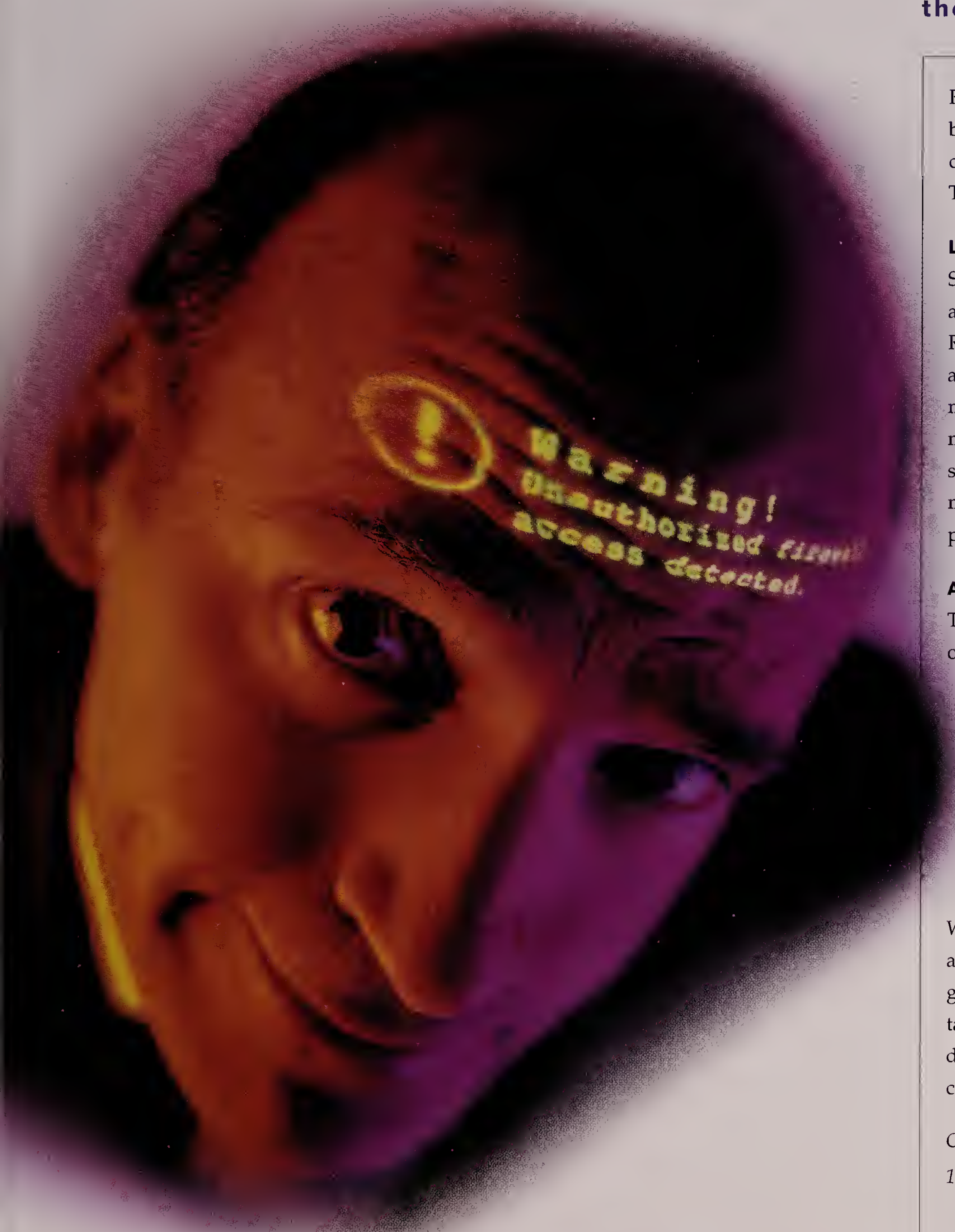
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Think Tank *By Tom Davenport*

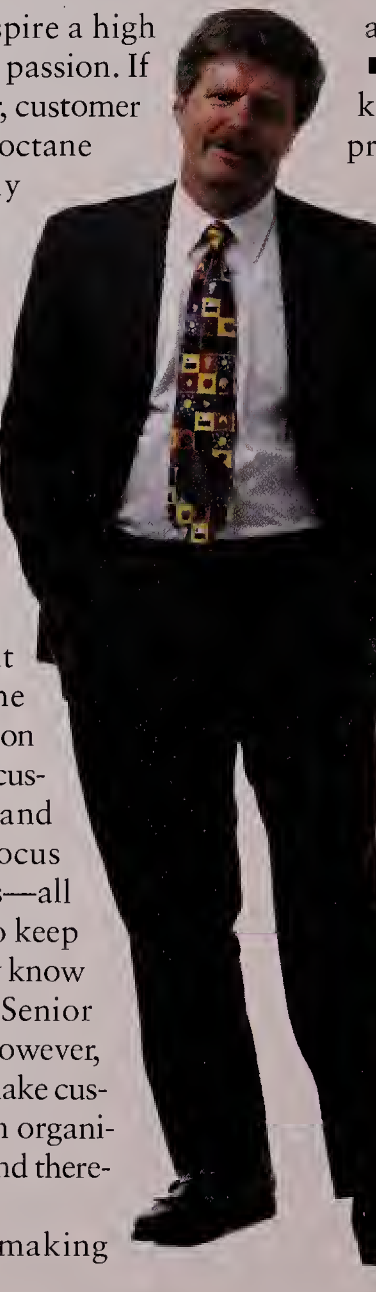
MAKING THE MOST OF AN INFORMATION-RICH ENVIRONMENT

Managing Customer Knowledge

Although many companies are using customer data, few are turning it into knowledge. What's the problem?

CLICHÉS ABOUT CUSTOMER knowledge abound. Know your customer. Fire your worst customers. Have a relationship with your customer. Market one-to-one. Virtually every manager would agree that more and better customer knowledge can bring economic benefits to a company. Yet after participating in two recent studies on customer knowledge management (sponsored by the Concours Group and the American Productivity and Quality Center) I've concluded that the state of the art in the field of customer knowledge is fairly artless. Certainly, some companies are doing impressive things with customer data. A few even manage to turn some of it into knowledge. But I can't point to any single company and say that it's got it right.

One difficulty is that customer knowledge is widely dispersed around a company. Many different business functions face off to customers, including marketing, sales, service, logistics and even financial functions. (IS, of course, doesn't typically interact with customers, which may also be part of the problem.) Each function usually has its own interests regarding customer information, its own way of recording what it learns and perhaps even its own customer information system. The disparate interests of departments make it difficult to pull together customer knowledge in one common format and place.



Customer information and knowledge also inspire a high level of politics and passion. If knowledge is power, customer knowledge is high-octane power; it is unlikely to be shared without reluctance. The salesperson with valuable customer information on index cards in his trunk or laptop, the service department with valuable information on what customers think about new products, the marketing organization with highly detailed customer attitudes and behavior from focus groups and surveys—all have some reason to keep control of what they know about customers. Senior general managers, however, generally prefer to make customer knowledge an organizational resource. And therein lies the conflict.

Another factor making the management of customer knowledge difficult is the fact that there are several different types, each of which must be managed with a different approach. The first type is data-derived customer knowledge that originates in transaction systems. We typically think of this type of knowledge as involving consumers, but it can also be about business customers. Managing this stuff involves several S's:

- **Strategy.** Defining what information is really important and what customer behavior really counts.
- **Standards.** Ensuring that "customer" and other related terms mean the same thing throughout the organization.
- **Systems.** Allotting sufficient processing power to chew through all the data.
- **Statistics.** Turning data into knowledge through statistical processing (although a neural network sounds sexier than statistics, that is really all it is).
- **Smart people.** Finding smart people to structure and interpret the analysis of customer data, regardless of what the data mining theory says.

Some companies are starting to get quite good at turning customer data into knowledge. MasterCard International Inc., for example, does it on a regular basis for member banks that want to understand the behavior of their credit card customers. FedEx uses it to increase market share and profitability among small shippers. Several regional Bell firms, including US West and the late Nynex, have

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used it to try to become customer-oriented before deregulation hits. The impetus to do so usually comes from marketing, but IT people are inevitably involved as partners. Companies that are successful at managing this type of customer knowledge put considerable resources into the problem. MasterCard, for example, has a group of 28 people who help spin data into knowledge.

But those who are good at data-derived knowledge are not always particularly outstanding at managing the second type. I call it human customer knowledge because it typically comes from interaction among people. It includes experiential observations, comments, lessons learned, conclusions and qualitative facts—e.g., organization charts—about the customer. This type of knowledge generally pertains to business customers or high-value consumers, though sometimes it is also useful to capture human knowledge from large numbers of consumers.

One good example of managing consumer human knowledge comes from General Electric Co.'s appliance division, where the GE Answer Center has provided service to GE appliance customers since the early 1980s (and frequently, though not intentionally, to customers of other GE divisions). In the late '80s, the GE Answer Center also became the "GE Appliance Customer Knowledge Center," although it was never given that name. Each service representative is supposed to—and usually does—record customer comments about appliances, dealers, service or other relevant issues in a central system. That's a good idea by itself, but what GE does with the data is an even better idea. It's reviewed by marketers, dealer relationship managers, customer service managers and, perhaps most important, manufacturing and new product development managers. The service-based customer knowledge is also used to rapidly identify appliance problems in the field (e.g., an improper installation approach) that can be addressed with product or documentation changes, saving vast sums in field dispatch costs.

How, in general, should companies go about managing human customer knowledge? Systems are important for capture and distribution, but their creation doesn't have to be difficult; GE's, for example, is an old, traditional database. What is difficult is motivating employees to record, share and use the knowledge. This won't happen by accident unless you have an extremely pleasant corporate culture and highly motivated people. Instead of counting on these things (I've been in your company and I know it isn't that wonderful!) it's better to mandate or strongly encourage knowledge behavior by evaluating people on the basis of it and rewarding those who display it. At GE, for example, participation in the customer knowledge system is an integral part of performance evaluations and bonuses. Also, as with data-derived knowledge, good management of human customer knowledge doesn't come without considerable human resources. The human knowledge has to be pruned, summarized, edited, put in context and otherwise massaged by smart human analysts. Perhaps someday we'll have machines that can do that, but I wouldn't suspend respiratory processes while you wait.

Disparate interests of departments make it difficult to pull together customer knowledge in one common format and place.

The third type of customer knowledge is tacit—unstructured, difficult-to-express knowledge that we observe or sense about our customers. We have a bit of difficulty with this as Americans; tacit knowledge feels squishy, and it often is. But the voice of the market never speaks clearly, and we often have to intuit messages from customers at the subrational level. Every good salesperson tries to elicit some tacit knowledge from a customer in the form of body language, facial expressions or other "vibes." Some market research experts now argue that customer opinions about products and marketing messages can best be understood in tacit forms of expression—say, how far the customer twists a dial—rather than explicitly stated verbal arguments. Tacit customer knowledge can be just as important to sales and marketing functions as the other types of customer knowledge.

The primary home of tacit customer knowledge management, however, is product development. And more specifically in Japanese product development. Ikujiro Nonaka, the UC Berkeley "knowledge professor," has been writing and speaking for a decade about how large, export-oriented Japanese companies turn tacit, metaphorical ideas about what customers want into successful products. Honda and Lexus, a division of Toyota Motor Sales U.S.A. Inc., for example, turned the shorthand phrases "Let's gamble" and "Western luxury," respectively, into highly successful new cars. Meanwhile, Sharp translated "Don't imitate" into a series of successful opto-electronic products. This concept is not exclusively Japanese; several U.S. automakers have also employed obscure-sounding metaphors for customer needs in designing new cars.

The good news about tacit knowledge is that much of it doesn't have to stay tacit forever; it can be converted through various means to explicit human knowledge and thus made more permanent and transferable. The bad news is that doing so is difficult. It requires continual observation, careful analysis of customer behavior and a patient disposition.

Customer knowledge isn't a highfalutin abstraction. When managed well and applied to various customer-facing business processes, it can increase customer purchase and retention levels, save money by directing marketing efforts at customers who will respond to them, and yield products and services that customers really want in the first place. If you're just getting started in knowledge management and wonder where to focus your efforts, don't overlook knowledge about customers—the business resource that keeps you in business. CIO

Thomas H. Davenport is a professor and director of the Information Management Program at the University of Texas at Austin. He welcomes reader comments at davenport@mail.utexas.edu.

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FOLLOW UP

Great Expectat

Freshman year brings change and challenges to new CIOs

Part of an ongoing series

BY TOM FIELD

Reader ROI

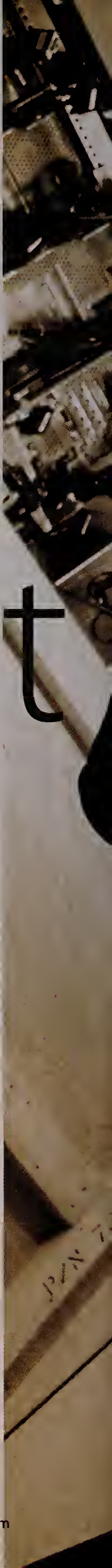
IN LAST SEPTEMBER'S 10TH ANNIVERSARY issue, *CIO* profiled four newly appointed CIOs and explored the unique challenges they face in their organizations. In this update, we revisit three of these CIOs to see

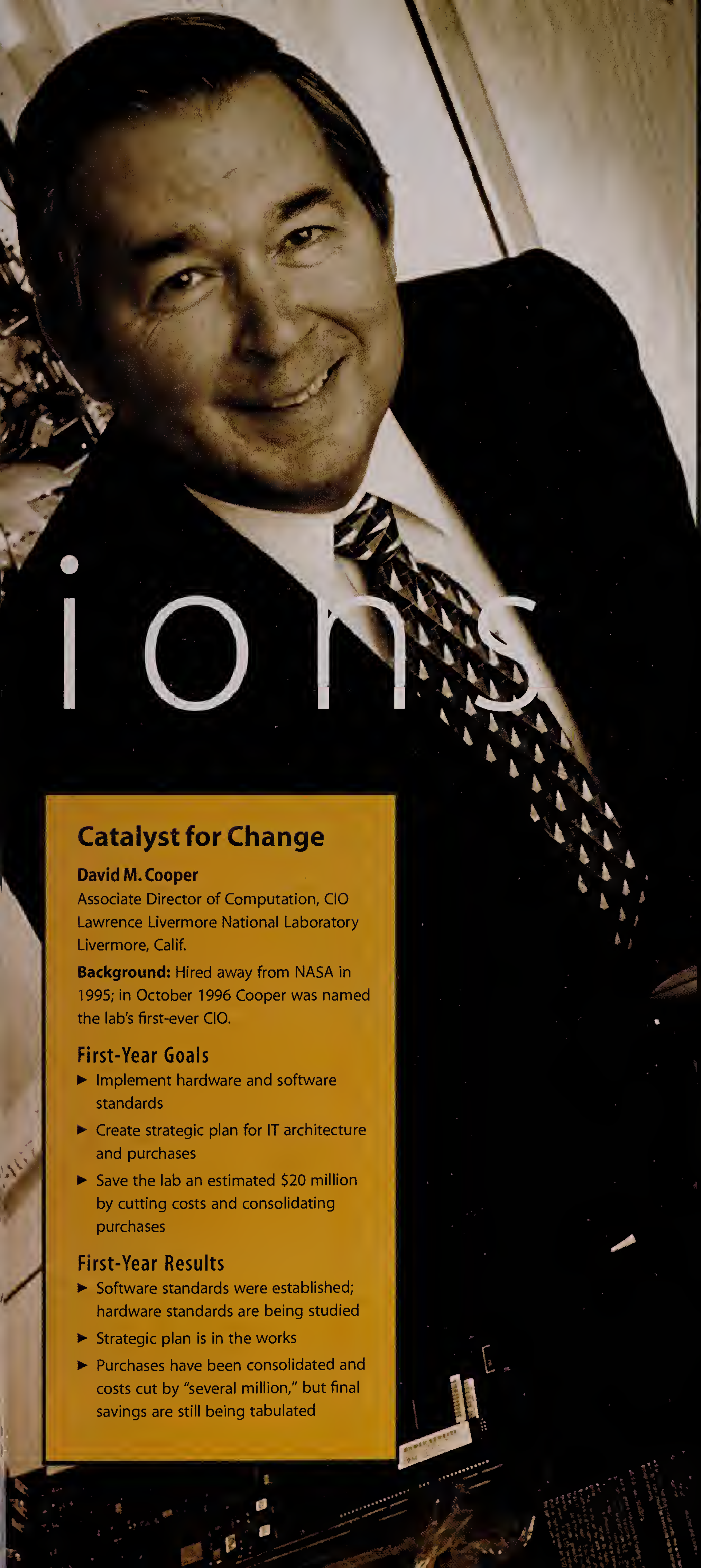
- What they have accomplished so far—and how they've done it
- How they have responded to business changes
- Where their next challenges lie

(STARBUCKS COFFEE CO. NO LONGER WISHES TO PARTICIPATE IN THIS SERIES)

FOR A MAN WHO SPENT 33 YEARS IN aerospace, David Cooper sounds surprisingly grounded these days. Talking about the worldwide IS staffing crisis, he laughs about wanting to erect signs on nearby Interstates 580 and 680, alerting traffic-bound motorists that "If you worked at Lawrence Livermore National Laboratory, you'd be home by now." And even when revealing impatience with the tortoise pace of change at the 46-year-old nuclear research facility, he says, "I sometimes find myself telling people, 'Remember, there are no speed limits on the road to success.'"

Reflecting on his rookie year as LLNL's first-ever





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PHOTOGRAPHY BY KENT HANSON

CIO, Cooper shifts from the highway to the railway and says with the modest confidence of one reluctant to be the first to say he's done his job well, "We're about on track, I think."

On track and headed in the right direction, judging from Cooper's accomplishments and his colleagues' appraisal. Since signing on at a time of great instability, as the lab began its post-Cold War transition from nuclear weapons manufacturer to stockpile steward, Cooper, 57, has been a stabilizing influence at LLNL. In his first year, he has completed a revolutionary campaign to impose desktop software standards on a user population that traditionally values its independence. In that same time, he's begun building a new strategic information architecture plan. And, to help retain IS staff, he sought and secured an average 10 percent salary increase for the lab's computer scientists.

And in racking up these accomplishments, Cooper has also secured the confidence and support of some influential lab leaders—a few of whom initially questioned whether this outsider could step into the insular lab culture and effect real change. Count Richard J. Fortner among the converted. A 30-year LLNL veteran, Fortner is the associate director of physics and space technology (and, incidentally, he chaired the search committee that recruited Cooper). When Cooper was hired, Fortner wondered whether he would be tuned in or out by lab lifers resistant to a newcomer's ideas. But Cooper's accomplishments erased those concerns. "He's really folded into the lab well," Fortner says. "He's gone from a place where his colleagues look at him and question, 'Can an outside guy do the job?' to where people really believe in him. People don't think of Dave as the new guy anymore; he's someone people count on."

Says lab Director C. Bruce Tarter, Cooper's boss, "Whatever a 'manager' is—and that word isn't always acceptable in a technical culture—I think that's what [Cooper] is: a heck of a good manager."

Cooper's communication and consensus-building skills have been key to winning support and overcoming challenges in each of his major undertakings:

Standards

When Cooper took office, LLNL's 10 directorates ran like individual IT fiefdoms. Labwide, IS supported roughly 11,500 Macs, 4,500 PCs from 100 different manufacturers and 3,000 Unix work-

Catalyst for Change

David M. Cooper
Associate Director of Computation, CIO
Lawrence Livermore National Laboratory
Livermore, Calif.

Background: Hired away from NASA in 1995; in October 1996 Cooper was named the lab's first-ever CIO.

First-Year Goals

- Implement hardware and software standards
- Create strategic plan for IT architecture and purchases
- Save the lab an estimated $20 million by cutting costs and consolidating purchases

First-Year Results

- Software standards were established; hardware standards are being studied
- Strategic plan is in the works
- Purchases have been consolidated and costs cut by "several million," but final savings are still being tabulated

stations of nearly as many varieties. Running on these machines were any number of messaging, presentation and word processing software applications. Consequently, the lab spent a fortune on software licenses and support. That LLNL could save literally millions of dollars by adopting common hardware and software standards seemed a no-brainer—except to many of the lab's users, who saw their IT independence as an inalienable right.

People wanted their pet systems and applications, and in the past that desire was justification enough to keep standardization at bay. To overcome that resistance, Cooper sought allies. He chartered a cross-functional desktop standards task force, made up of LLNL veterans, to review the lab's hardware and software needs and to recommend appropriate standards. After about three months of study, the task force brought its recommendations to Cooper, who then presented the proposed standards to all LLNL users via the lab newspaper and an intranet Web page. None of the standards would be considered bombshells by most business executives—Microsoft Corp. Office suite on desktops, Eudora for e-mail, Netscape Communications Corp.'s Navigator for Web browser, for example (a complete list of standards is available online at *www.llnl.gov/projects*). But they constituted a significant step for LLNL. The biggest complaint? E-mail. The lab was split pretty evenly between devotees of Eudora and those who preferred CE Software Inc.'s Quickmail, so half the users were unhappy when the task force went with the Eudora recommendation. Cooper received about 100 critical responses about the standards. He replied personally to each of the complainants, explaining the rationale behind the recommendations.

> *When you say "standards," people worry their computers will be taken away.*

After a three-week comment period, Cooper presented the proposed standards to the lab's Council for Strategic Operations, which OK'd immediate implementation last September. "I got good and lucky," Cooper says of his success at swaying the skeptics. His colleagues say that luck had nothing to do with it. "Anytime someone says 'standards' in an R&D organization, people are going to worry that 'he's taking away my computer,' and there's going to be resistance," says Dennis K. Fisher, associate director of plant operations. But by taking his case directly to the users, Cooper helped people feel they had a voice in—and weren't just victims of—the selection process. "The standards have been inclusive, but without edicting them, by doing it by consensus, Dave has effectively moved us down the path [toward standardization]," Fisher says.

Strategy

Cooper is trying to instill a long-term, labwide approach to IT architecture and investments, and so far progress has been slow. His initial approach was similar to his standardization tactic; he chartered a 40-member, cross-functional information architecture committee. But unlike the standardization task force, this committee had a hard time reconciling its members' individual interests. "When I first saw this group together, I thought, 'Uh-oh, this is a disaster; it's not going to work,'" Cooper recalls. Individuals just didn't seem able to put aside partisan issues and think labwide. But by hammering home the potential benefits of a common, strategic plan—ease of cross-lab information sharing, improved systems service and support—Cooper helped to unite the committee members' disparate agendas. After some months of work, the committee emerged with a seven-point blueprint defining the lab's information architecture. Big-picture highlights of the plan (available online at *www.llnl.gov/projects/ia/committee.html*) touch upon the need for hardware and software standards, labwide maintenance and support and a new commitment to tear down the directorate's information silos and make critical data easily accessible to appropriate users throughout the lab. "This [effort] is going a little slower than I expected," Cooper says. "But maybe it just took me longer to get across my message."

Staffing

Like most IT-dependent organizations, LLNL is squeezed by the global IS staffing crunch. The good news for the lab's recruiters is that LLNL is located just outside Silicon Valley, a Mecca for talented technical people—but that's also the bad news. The lab can't compete with the high salaries paid by the Valley's software giants and entrepreneurial ventures. And although the lab's IS turnover rate is only about 8 percent—considerably lower than the 14 percent average IS turnover rate identified by a recent *CIO* survey (see the special issue "Help Wanted Now!" Dec. 15, 1997/Jan. 1, 1998)—that figure doesn't account for the cost of replacing LLNL IT workers, who must have top-notch skills and top-level government security, neither of which comes cheaply. "For us to lose someone is expensive," Cooper says. And that's the case he made to the lab's directors when he argued successfully for an average 10 percent pay increase for computer scientists. By securing that raise, Cooper not only showed his organization he was for real, he showed the entire lab that he was serious about his commitment to LLNL's IT systems and staff.

The trick now is to convince potential recruits that by foregoing greater salaries available in the commercial world, they can be a part of something special by coming to work on such high-profile projects as LLNL's 10-year, $1 billion Accelerated Strategic Computer Initiative (ASCI), aimed at enabling computer simulation of traditional nuclear weapons tests.

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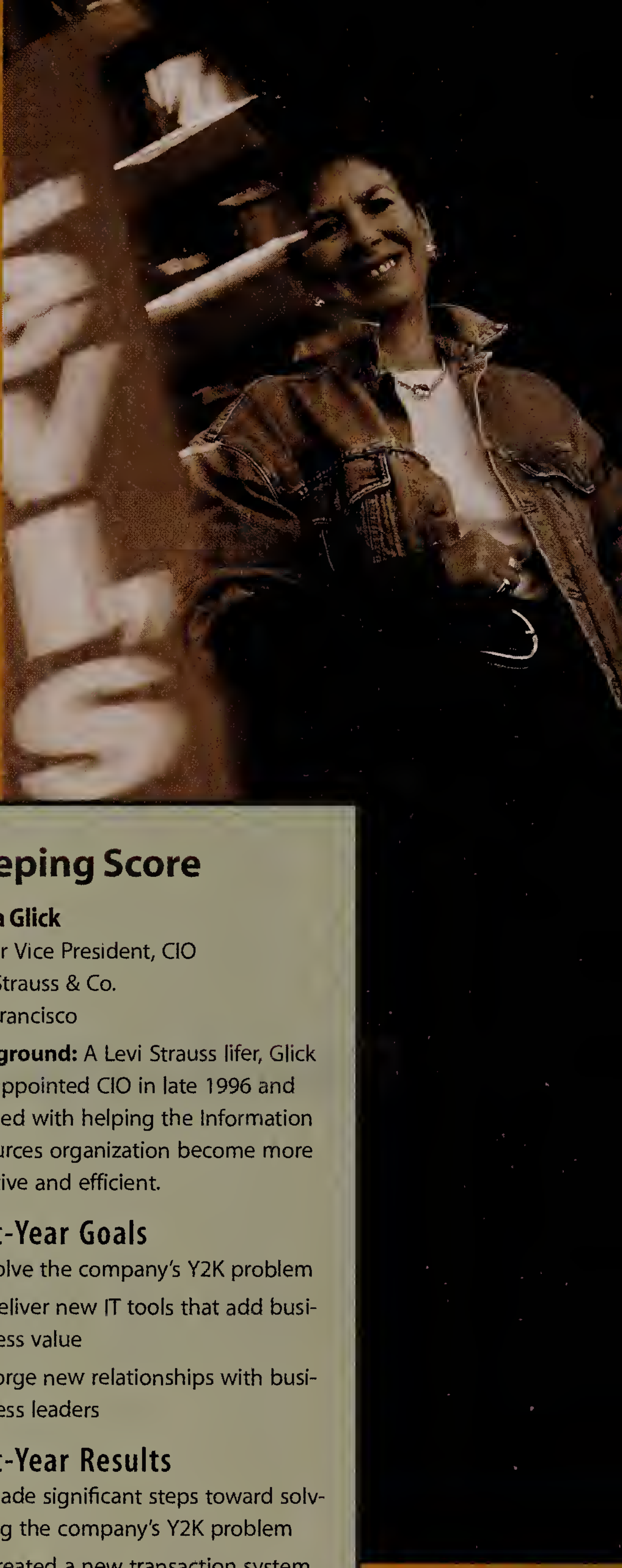

When Linda Glick first became CIO of Levi Strauss, she thought the only way her Information Resources organization could gain credibility would be to create a new set of metrics by which the board of directors could gauge IR's business impact. And while she's still trying to devise a "scorecard" to help determine the true business value of IT, Glick says she has already discovered one metric that really counts: delivery. "Do what you say you're going to do," she says. Among her accomplishments:

Y2K Glick promised Levi Strauss's President Peter Jacobi that the company's Y2K problem would be licked by the end of this year, and her group is well on the way to completion. Currently, 76 separate Y2K projects are ongoing worldwide, and Glick expects them to be wrapped up by year's end. "Solving Y2K doesn't add a tremendous advantage to the business in terms of brand value," she says, "but it sure would be a tremendous disadvantage if it were not fixed."

New Tools Nimble. Responsive. Risk-taking. These are the qualities Glick exhibits as IR attempts to deliver new tools to bring Levi Strauss closer to its customers. An example of what Glick wants: Personal Pair. The company is currently updating this popular application, which allows customers to electronically order custom-made jeans to fit their exact measurements.

IR recently designed and built a new transaction component system in record time. Rather than spend months studying the business model and analyzing potential solutions, as IR typically would, "We just jumped into it," Glick says. "The whole system was done, front-to-back, with a working system in beta testing in a Costa Mesa store, in just five months. That's not our track record." The lesson, Glick says, is "We have to take some risks, try some things and learn from the experiences. We can't analyze and look for the perfect solutions. Technology is changing too quickly, so we need to take some 'disciplined' risks."

Partners Levi Strauss's sales slipped 4 percent, from $7.14 billion to $6.86 billion in 1997—the first sales decline in more than a decade—and the company regrouped. Amidst this shakeup, IR is prominent in the mix. Glick says she is invited to participate with business partners on such projects as organizational design and distribution center strategy. IR, meanwhile, is beginning to deliver new systems in partnership with such departments as product development, forecasting and planning, and consumer intimacy. Also, IR is working on an ERP rollout in Europe and is looking for a place to use ERP in the United States. "If we want to be partners with the business, we need to think as business people first and then as technologists," Glick says. "I believe that [IR's] core competencies are our knowledge of the Levi's business and IT best practices. When we apply both is when we add value."

Among her top second-year goals, Glick hopes to lead IR in

- Completing its European and U.S. ERP rollouts
- Helping open three new U.S. distribution centers
- Developing new electronic commerce initiatives involving suppliers, partners, consumers and retailers
- Creating a learning organization within IR so the department can better leverage its worldwide resources

Despite her early successes, Glick remains hungry to achieve more of her goals and hates that she can't accomplish them as fast as she'd like. Glick's standards for the company are high, and the slow pace of implementing technology change at Levi Strauss can serve as a stumbling block. But instead of lowering her expectations to meet the slower pace, she's aiming high and trying to bring the pace up to meet her goals. "If I'm personally disappointed, OK. But if I lower my expectations, that's wrong."

Keeping Score

Linda Glick
Senior Vice President, CIO
Levi Strauss & Co.
San Francisco

Background: A Levi Strauss lifer, Glick was appointed CIO in late 1996 and charged with helping the Information Resources organization become more effective and efficient.

First-Year Goals

- Solve the company's Y2K problem
- Deliver new IT tools that add business value
- Forge new relationships with business leaders

First-Year Results

- Made significant steps toward solving the company's Y2K problem
- Created a new transaction system for "Personal Pair" customized jeans service
- Helped the company respond to major business shifts

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The first half of Jonathan Fornaci's year went as planned. His staff acquired new skills, established an intranet and—the biggest accomplishment—made IS instrumental in the August 1997 launch of Online Inventory and Booking (OIB), a Web-enabled customer-facing system that allows customers to complete equipment bookings in less than three minutes—five times faster than before. In its first day of operation, OIB was such a hit with customers that it earned back its entire $750,000 time-and-materials investment.

But then came September's big news: Genstar was to merge with industry rival Sea Containers Ltd. to form a new, London-based joint venture, GE SeaCo Ltd. Suddenly, rather than complete Genstar's IT makeover, Fornaci was overseeing the merger, which ultimately will incorporate roughly one-third of Genstar's systems and staff.

Fornaci was offered a position with the new company but turned it down—he didn't want to relocate to London. Instead, on March 1, Fornaci left GE to become CEO of San Francisco-based Ibis Consulting Inc. Founded in 1994 by a pair of Price Waterhouse expatriates, Ibis (which draws its names from the long-legged bird that symbolizes the Egyptian god Thoth, lord of wisdom and higher knowledge) is a full-service IT consultancy trying to carve a niche alongside the "Big Five" consulting firms.

At Ibis, Fornaci will be expected to provide management to a staff of 120 that is growing by 10 to 15 members per month, as well as to seek out new acquisitions and business opportunities to maximize Ibis's growth. So far, the privately held company has grown at a pace of 100 to 150 percent per year. Fornaci's mission is to manage future growth with an eye toward taking the company public in two to three years.

Perhaps one of Fornaci's biggest challenges will be adjusting from the trappings of a well-heeled, global company to the entrepreneurial atmosphere of a startup, says Ibis cofounder Brenda Wong. "It's a different kind of environment," Wong says. "The perks available at a big company—the big car with a parking space—he won't be getting here." The trade-off, she says, is that "It's all him." Fornaci will be able to call his own shots and take risks on the fly. But one thing to remember, Wong says: "There's nothing between him and the pavement."

Until now, Fornaci has prided himself on changing jobs every two years in search of new challenges. But he says he sees long-term prospects at Ibis. "The sky's the limit," Fornaci says. "As long as I do a good job, there's no reason for me to leave. I can stay 10 or 20 years. I've never, ever said that before in my life."

The New Realities

Jonathan C. Fornaci
CEO
Ibis Consulting Inc.
San Francisco

Background: Fornaci joined Genstar Container Corp., a GE Capital company, in early 1997, charged with restructuring IT to cut costs, boost revenues and improve customer satisfaction. About a year later, Fornaci left GE to become CEO of San Francisco-based consultancy Ibis Consulting Inc.

First-Year Goals

- Upgrade internal IT infrastructure
- Develop a Web-based extranet to improve customer service
- Create an enterprisewide data warehouse

First-Year Results

- Created companywide Intranet
- Launched 12 new extranet applications, including a new online booking system for customers

"We're leading and defining the state of the art," Cooper says, "so I ask [potential recruits], 'Do you want to *define* something, or do you just want to satisfy the masses?'"

Unfinished business

Cooper hasn't met all his objectives. He's tackled the software standardization issue, but hardware questions loom—and he expects a fight. After all, he's thinking about asking the lab's loyal Mac users whether they'd consider switching to the more widely embraced PCs. Users resisted his software standards suggestions; he expects the Mac/PC debate, if it occurs, to be a doozy. Cooper also hasn't finished quantifying the cost savings from consolidating IT staff and software applications, so he can't yet demonstrate an ROI for all his efforts. And without a complete handle on what the lab spends on IT, Cooper can't even consider outsourcing, which was one of the strategies he'd hoped to explore by now. He expects to have those numbers crunched soon.

As he begins his second full year as CIO, Cooper identifies three major strategic objectives:

- Finalize and begin implementing the strategic information architecture plan
- Identify and implement hardware standards
- Consolidate all the lab's sundry desktop and LAN support services under a single organization within his directorate

How has the lab changed so far under the direction of its first CIO? Fortner bases his answer on personal experience. "I'm switching [e-mail systems] to Eudora," he says. "I can't imagine, 10 years ago, someone coming in and telling me I had to change my software. I wouldn't have said 'no'—I would have said '*hell*, no.'"

How does one man turn a "hell, no" to a "hail to the CIO"? "Personality," says Tarter. "[Cooper] is persistent, but he's always viewed as a reasonable person—not a dictator," he says. "He will hear another argument, but he always stays true to his principle."

Fortner agrees. Because Cooper brought managers together to write policy, because he consistently sought and responded to feedback from individuals affected by policy change, lab personnel are now willing to make decisions for the greater good, not just to benefit their individual directorates.

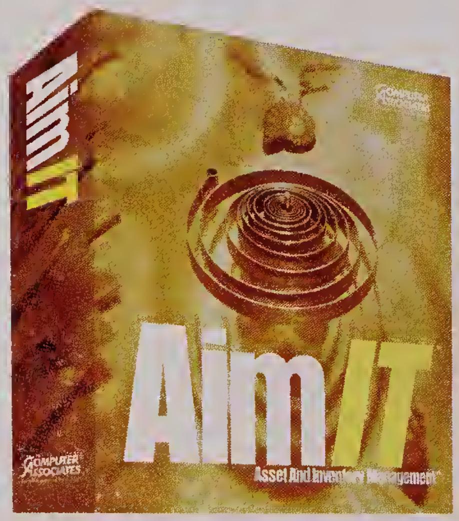
And to reciprocate the goodwill he's been shown, Cooper has championed at least one cause that directly benefited lab employees' personal growth: Internet use. A year ago, Cooper challenged the Department of Energy (the lab's parent) over its "no personal incidental use" Internet policy—and won (see "Civil Insurrection," *CIO* Section 1, Nov. 15, 1997, Page 52). It wasn't a particularly easy fight—Cooper had to draft, present and defend a less-stringent policy—and it wasn't the most important use of Cooper's time. At stake, after all, was only whether lab employees would be allowed to send and receive personal e-mail and occasionally surf the Net for educational and personal development reasons. Yet Cooper deemed this cause worthy, and his efforts won applause from LLNL staff who were delighted that the CIO would take up what some executives might see as a trivial matter. Subsequently, lab employees have justified Cooper's faith in them. Since the new Internet policy went into effect last June, there have been no major violations.

LLNL's Director **Bruce Tarter** *applauds Cooper's persistence and personality.*

Yet Cooper's populist support doesn't guarantee future success. The standards fight, for one, isn't over. "When people have to give up their Macs for PCs," Fortner says, "well, let's just see...."

But maybe Cooper doesn't have to fulfill every one of his objectives to be considered a success at LLNL. "It's a tough market and a tough culture here," Tarter says, "If [Cooper] gets only two-thirds of the way there, he'll still have done a pretty good job." CIO

Senior Writer Tom Field can be reached at tfield@cio.com.



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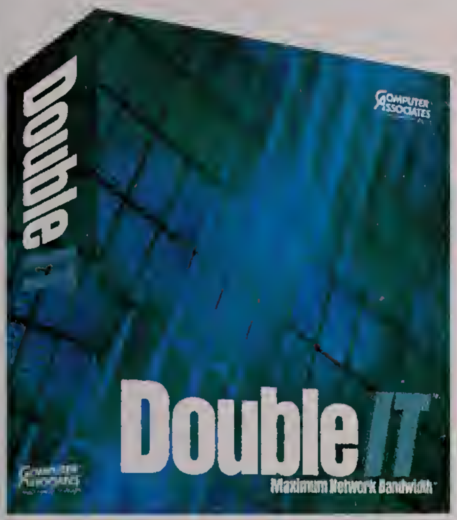

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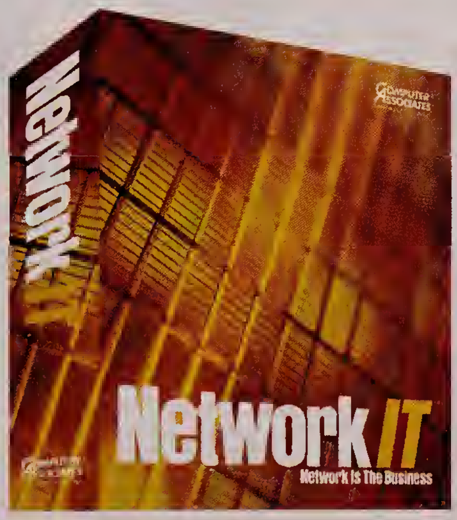

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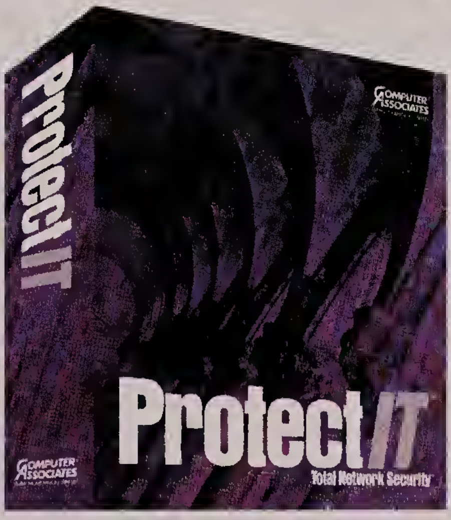

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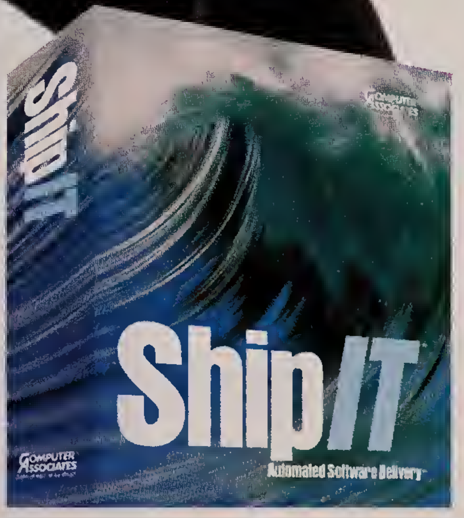

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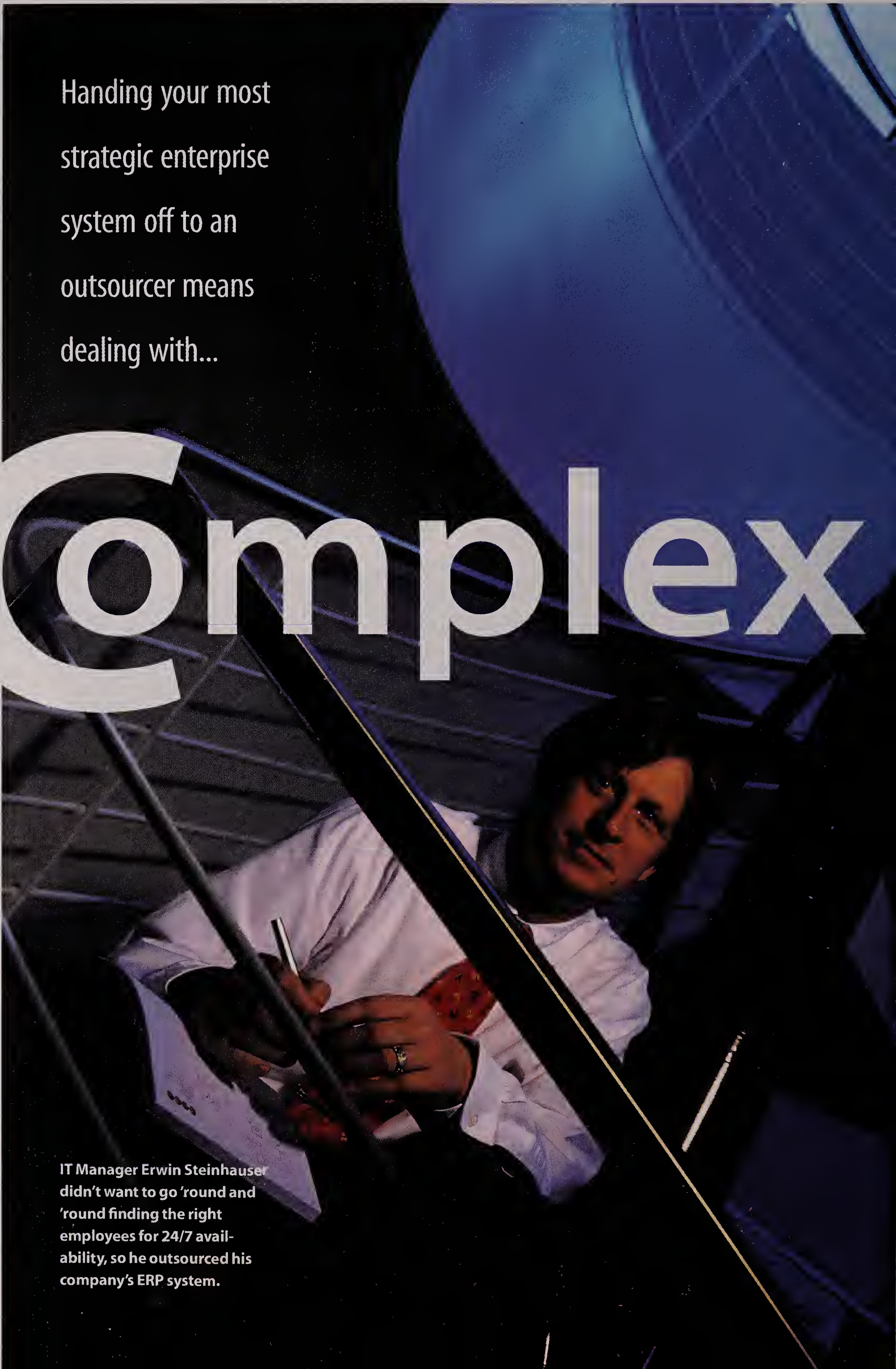

IT Manager Erwin Steinhauser didn't want to go 'round and 'round finding the right employees for 24/7 availability, so he outsourced his company's ERP system.

Compromises

BY DAVID PEARSON

RARE IS THE I.T. EXECUTIVE WHO, IN the midst of an ERP implementation, thinks about who's going to maintain the engine once it's firing on all cylinders. On the IS time line, ERP is still relatively young, and because implementation—that is, the combination of installing the software and configuring the modules for your business—can take so long, few CIOs have had time to focus on the final phase. But IT executives who've reached the Promised Land of a smoothly running ERP system say it's never too soon to plan for installing upgrades, maintaining modules, trouble-shooting problems and policing platforms once the software enters the longest phase of its life cycle—ongoing operations.

Reader ROI

IF YOUR ENTERPRISE IS TAKING THE plunge into enterprise resource planning software, you're probably too wrapped up in implementation to worry about how you'll maintain and update the system in the future. Yet the sooner you get started on that necessary initiative, the better your chances for making cost-effective decisions. In this article, you'll learn

- When it makes sense to outsource ongoing ERP operations
- What should be in the contract
- How to manage the work of an ERP outsourcer

PHOTO BY GEORGE SIMIAN

ERP service vendors have taken notice of the potential new market. They're anticipating an ERP outsourcing jackpot worth as much as $8 billion a year, according to Meta Group Inc., the IT market analysis firm based in Stamford, Conn. So if you haven't yet been approached by an outsourcer eager to talk about your ERP operations, you will be. (Meta estimates that fewer than 200 IT organizations worldwide currently outsource operations of SAP R/3, for instance, but anticipates that this number will swell to more than 750 by 2000.)

ERP is too complex to manage in-house and too strategic to outsource.

And that leads to the question: When and for whom does outsourcing ERP operations make sense? And once that decision has been made, what are the major contract-negotiation and management issues IT executives should consider as ERP implementation begins to wind down? *CIO* put those questions before a number of companies that are exercising their outsourcing options on ERP operations—and one that considered that path but rejected it in favor of taking care of the work itself.

Why Outsource Something So Important?

Small and midsize IT organizations will be most inclined to outsource ERP operations because they lack the resources to handle them internally, but larger companies can also derive advantages. Ultimately, the reasons for ERP outsourcing are as varied as the participants.

Breadth of skills. "We were midway through implementation, and we realized we didn't have all the skills we needed in some of the advanced areas," says Phil Coup, vice president of Texas Instruments Inc. in Dallas, which is using SAP's R/3 ERP package. A glitch in the semiconductor group's operations would have a conspicuous impact on TI; Coup's semiconductor group accounts for about 80 percent of the company's $10 billion business and has an IT staff of more than 1,000, serving 10,000 users around the globe. Coup acknowledges TI needed help in mapping out service pathways, from customer request through problem resolution, and setting up the ERP infrastructure—the servers, networks and middleware—to manage expanding Web activities. "Our people are skilled in the mainframe environment, but we didn't have the depth we really needed in client/server computing," says Coup.

Coup's group began its SAP project using internal resources supported by a small number of training consultants. That changed when Andersen Consulting proposed a dramatic remedy to TI's SAP anemia: Transfer 250 TI people into Andersen to finish implementation and then operate the SAP application under a five-year, $200 million contract though an Andersen program called Design, Build, Run. The former TI staffers would be folded into a centralized Andersen ERP support function servicing multiple clients. And they wouldn't have to go far to reach the function's headquarters; they would still be housed in leased space in a TI facility.

"We saw that this was a more cost-effective situation than trying to keep a staff of TI people here just to run and maintain software," says Coup. "It gave us access to the depth we needed." At the same time, because the group of 250 would be serving a number of different clients, it was a better long-term opportunity than TI could offer them as employees dedicated to SAP. To date, TI has completed implementation of the finance modules in a couple of locations; the bulk of its SAP implementations will be completed next year.

Salary issues. Taylor Publishing Co., a producer of trade books and school yearbooks based in Dallas, has a much smaller IT staff than TI but arrived at a similar solution. When Taylor contracted with Perot Systems to implement its Baan Co. ERP system, it also contracted the firm to run the system once the implementation was completed (the system went live last October). Like TI, Taylor planned to transfer its nine IT staffers to Perot. But four of the group chose to resign, citing a variety of reasons, including reticence to learn entirely new skill sets and the desire to stay in the publishing industry as opposed to joining a systems integration firm. Perot hired replacements, and this was fine with Taylor's Vice President of IS Steve Kreider. "As an employer, we're just not as attractive as a Perot for the kinds of skills we need to run ERP," he says. "We can't compete on dollars."

What Goes Into ERP?

The issues involved in ERP *(or ERM, for "management")* operations are complex. In general, there are three layers, which may be divvied up for sourcing or handled as a total package.

Infrastructure

- Hardware (usually Unix or NT servers)
- Operating system (many Unix variants and Windows NT)
- Database management and administration (load balancing, logs and installation of updates and patches)

Comment: Critical issues include developing true 24/7 operations capability in these environments and the general management of client/server environments.

VP Phil Coup was midway through his implementation when he realized his group at Texas Instruments didn't have the skills necessary to handle the most complicated areas of ERP.

PHOTO BY DANNY TURNER

The situation is similar at ESEC, a Cham, Switzerland, supplier of systems solutions for companies in silicon packaging and electronic assembly. Group IT Manager Erwin Steinhauser chose to outsource operations on SAP R/3 after projecting what it would cost and involve from a management standpoint to beef up his worldwide IT staff of 30 in seven locations (the company has a total staff of around 1,200). "We calculated what it would take for us to provide 24/7 availability on SAP, to which the company was looking for global solutions," says Steinhauser. "It turned out that finding the right employees with high SAP expertise would be both too expensive and too time-consuming."

Steinhauser contracted with Hewlett-Packard Co., a longtime supplier of hardware to ESEC, to maintain Basis, a discrete infrastructure layer in R/3 that includes load balancing, logs and installation of updates and patches. Steinhauser's group will handle the rest of the system maintenance, including all first- and most second-level technical support, on its own. The company completed implementation at its headquarters in March; other locations are still in the process.

Upgrade crunch. Ticona, a 2,500-person supplier of thermoplastics based in Summit, N.J., which was spun off in 1997 from the Hoescht Group, also has about 30 people in IT, but its outsourcing attack is significantly broader. Ticona signed a comprehensive contract with Andersen soon after Manager of IT Russ Bockstedt recognized that new versions of R/3 were coming out faster than his staff could implement the old ones.

"It's hard for a medium-size shop to keep pace with the technology," he says. "We deliberated rebuilding our staff and splitting the project between different vendors, but with the initial installation overdue, senior management felt strongly that whoever was going to take over implementation should really take full ownership of the entire system. Andersen's commitment to run the SAP application when it was done was a big selling point to our senior management." The contract became effective in January.

Like Taylor's Kreider, Bockstedt dealt with disgruntled personnel. He says he was very open and honest with the staff about considering an outsourcing solution to the SAP conundrum, but that didn't keep several staff members from tendering their resignations. "Some people were uncomfortable about the uncertainty because we didn't have the answers to all their questions right away," he says. "We didn't lay anyone off, but we couldn't make any assurances, either."

Fear of distraction. "There are people who have competency centers to do

Modules

- Ongoing implementation (for phased rollouts)
- Training people on new environments
- Continued customization of packages to align with business processes

Comment: Many IT organizations are trying to keep custom code below 10 percent to keep expenses for ongoing maintenance to a minimum.

Processes

- Specific handoffs between the IT organization and vendors
- Escalation procedures between multiple vendors

Comment: The challenge is to manage these activities effectively without giving vendors room to fight over blame for errors by investing in sufficient IT staff to design, implement and measure performances against service levels.

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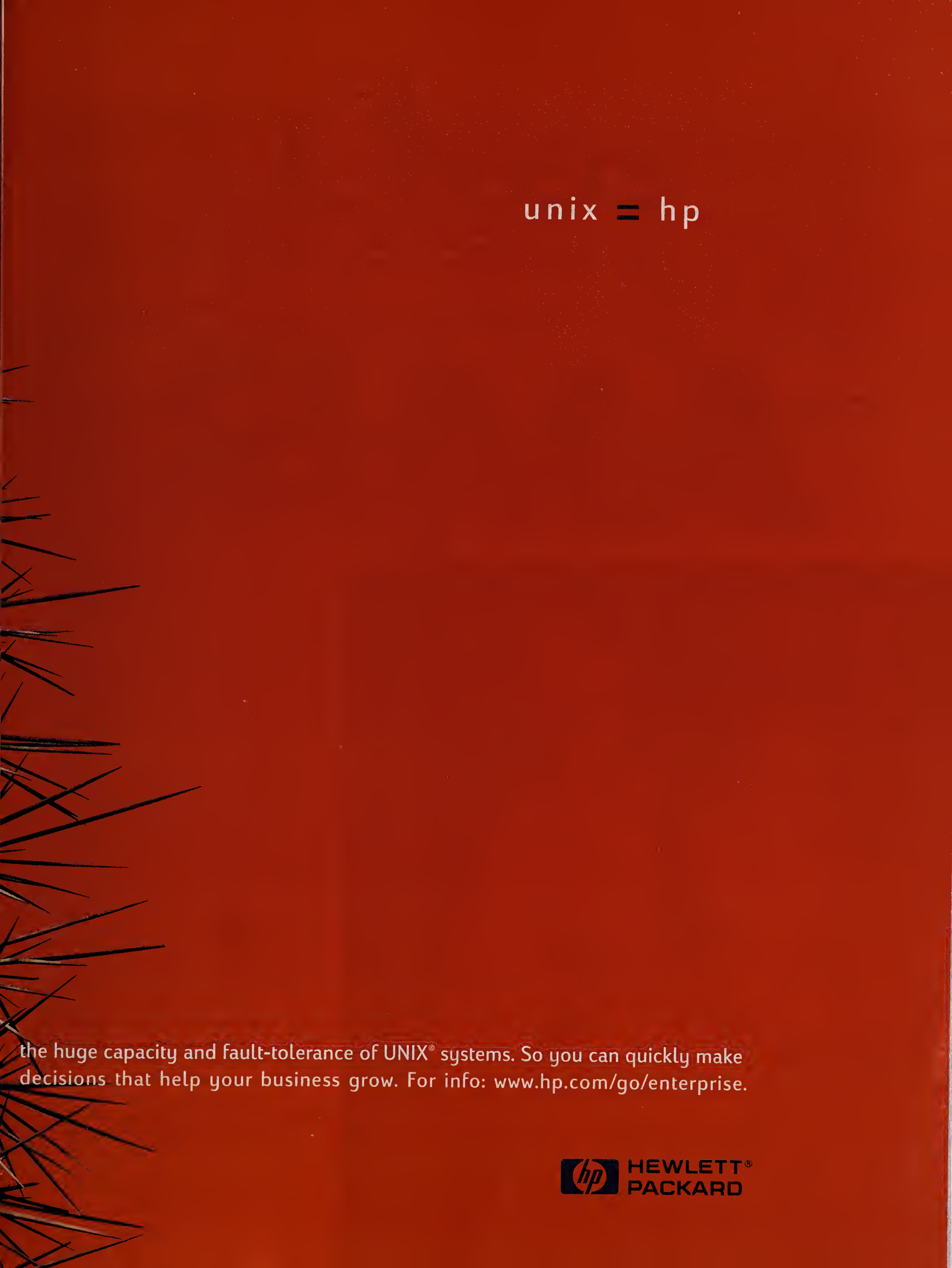
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things that don't add value to their core processes," says Dick Lefebvre, director of IT for Simpson Industries, a $450 million auto parts manufacturer based in Plymouth, Mich. "We decided that includes things like support and maintenance of our ERP system." Simpson's ERP system, from JD Edwards, is being implemented and will be operated by IBM Global Services of Rochester, N.Y. Simpson, which operates seven plants in the United States plus one each in Canada and Mexico, is close to completing implementation. All but three sites are live.

Managing Staff That's No Longer Yours

No matter whose logo is on the paychecks, the challenge of managing the folks in the ERP trenches doesn't go away. "It takes more work on our side of this than I originally thought," says Coup. "You can't just turn [any part of SAP] over to someone and then sit back while they go and do the job. We've found that we have to have very active involvement from good technical people working with the vendor."

For TI, active involvement means being bullish on documentation. That way, if Coup ever decides to switch to another outsourcer, he'll have accurate records of how his SAP system is configured. He inserted a clause in his contract with Andersen that says TI can withhold final payment until a second outsourcer has confirmed the documentation is clear. This includes even minor details such as how to set up a printer connection. "We didn't want them going off and coming up with solutions that would require us to scrap everything we had," says Coup, "so that we'd have to buy all new servers, networks, the works."

Steinhauser follows Coup's approach, insisting that the quality of an ongoing ERP partnership is a direct reflection of the detail of the contract that defines it.

> "We watch very closely to see how they handle difficult situations."
>
> –ERWIN STEINHAUSER

(It took almost a full year for ESEC and HP to negotiate the terms of their contract; they relied on a letter of intent to define the relationship in the meantime.) "We defined uptime as the time a user could use the system without performance constraints and specified that we require 99.5 percent uptime," says Steinhauser. That may sound very high, he says, but they also invested in redundant hardware that could support such demands. "It's not like we bought the cheapest server and then demanded nearly constant uptime."

"HP tells me they haven't made a contract in such detailed form," says Steinhauser. "We've got clauses for change management, fallback scenarios, security, infrastructure. They say it's highly detailed, more so than most. I don't believe that. I'm convinced the contract with HP was a normal outsourcing contract, considering points which have to be included to keep the outsourcer on their toes. Because in the end, both HP and ESEC have to make money."

He also keeps a stern eye open for subjective performance indicators such as attitude. "We watch very closely to see how they handle [difficult] situations, especially when there are hardware problems," he says. "Of course, we also monitor how well they perform according to the contract. The point is, we control their work."

Bockstedt's goal is to make sure that the outsourcing staff is treated the same as the internal staff. Vendor staff will be treated much like Ticona employees—they'll be expected to attend staff meetings, for instance, and they'll be included on the company's internal mailing list. "I see my job as setting the strategy and

Director of IT Dick Lefebvre would rather focus on Simpson Industries supplying auto parts to the Big Three than be distracted by running its ERP system.

PHOTO BY ROB JOHNS

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serving as a kind of ombudsman for our user groups," he says. "That means making sure needs get met, which I prefer to do by treating all contributing IT people as partners, as members of one big team with a common goal."

Lefebvre prefers a hands-off approach. "The first four months we spent getting acquainted" with IBM, he says. "We had to figure out who was leading the dance. We started out with change-management meetings once a week, then went to biweekly. Now I think it's just monthly. I've actually lost track of that because [ERP operations] turns out to be a process that really manages itself."

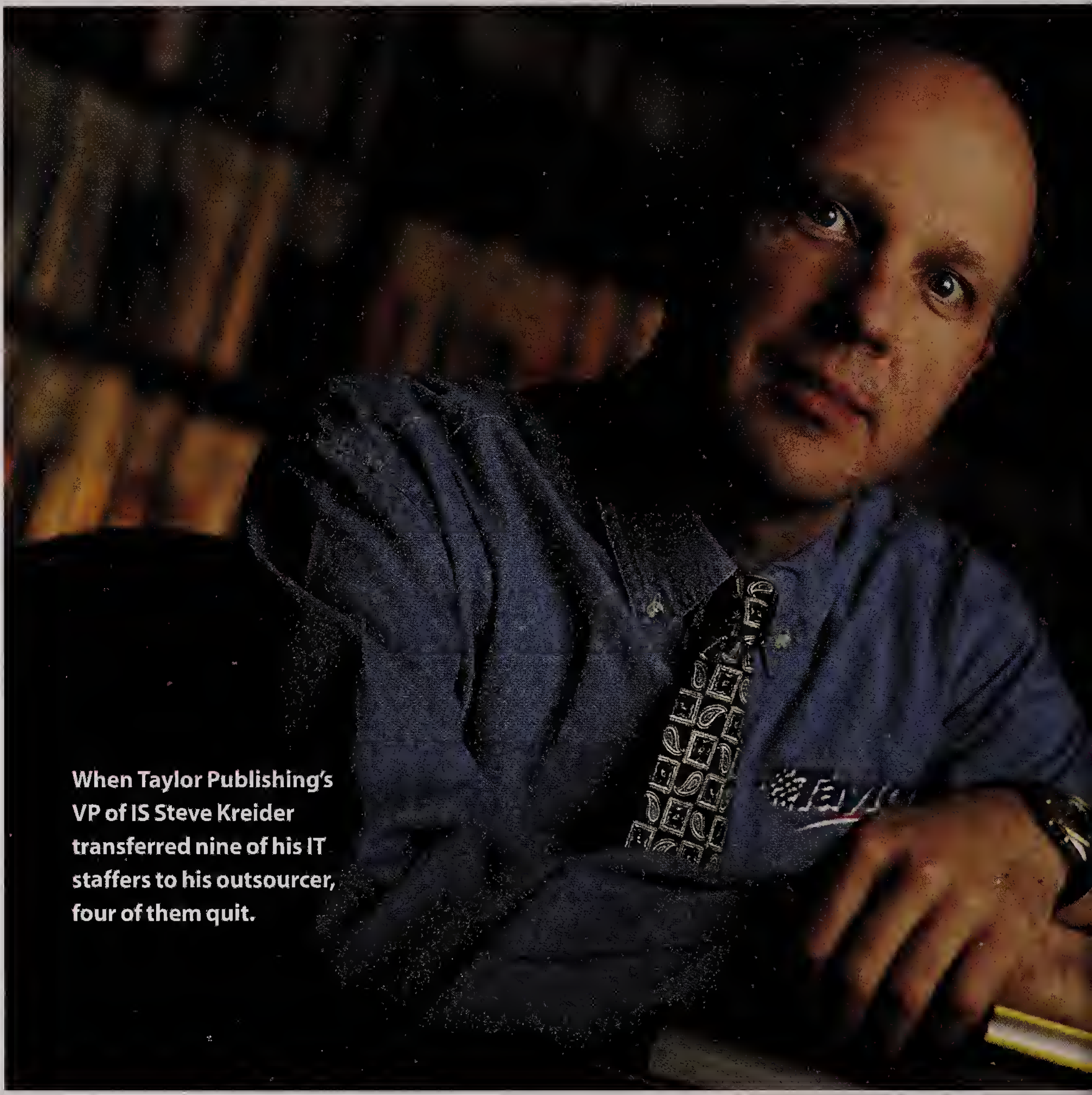
The Contrarian Viewpoint

Of course, plenty of IT organizations don't have to trouble themselves with such concerns. For example, Allegiance Healthcare Corp. of McGaw Park, Ill., a 20,000-employee, $4.5-billion spinoff from medical products giant Baxter International, has the girth to go it alone on its ERP implementation—and the resolve not to give the outsourcing option serious consideration. Why is CIO Kathy Brittain White so firm? She's measured the outsourcing option and found it wanting for both reliability and cost-effectiveness.

"I've always believed that what is strategic, you don't outsource," says White. "SAP is strategic to us because it's intertwined with everything we do." This includes just-in-time inventory delivery and an electronic store on the World Wide Web. "When you need 24/7 availability, and your customers are hospitals expecting your product so they can perform emergency surgery, there's just no room for error. In the limited outsourcing we've done, we've had difficulty matching the service we need—and get from our own people—to run this business."

"There are no financial models today that would suggest that outsourcing would save Allegiance any money on R/3," insists Rich Gius, Allegiance's vice president of IT business systems. "We've worked hard to reduce costs significantly without having to do outsourcing, so some of the pie any outsourcer would have gone for was removed from IT over the last three years. On the R/3 side, particularly post-implementation support, the cost is all labor. So the question is, can an outsourcer staff the function more efficiently? And the answer, when we reach that point, will be no."

Simply stated, the ERP conundrum revolves around the fact that it's too complex to manage in-house and too strategic to outsource. CIOs have to find the comfortable middle ground appropriate for their companies. At this point, most CIOs have to rely on their own vision and foresight. After all, most of them are still either waist-deep in implementations of a limited number of modules or just getting their feet wet running ERP. Clearly this will be an area worth revisiting three to five years down the road.



When Taylor Publishing's VP of IS Steve Kreider transferred nine of his IT staffers to his outsourcer, four of them quit.

PHOTO BY DAN BRYANT

"It's installed and running," says Taylor Publishing's Kreider. "Has it resulted in substantial business benefits? Not yet. We've changed some processes, improved some practices—but now we've got to use ERP to drive a better bottom line. But other than that, we don't yet have a firm grasp on exactly where we're going with it. Now that we're comfortable that operations are in good hands, my goal is to set goals. Part of the benefit of ERP is capturing the data to let us know what our goals ought to be."

Meanwhile, it's still a matter of wait and see. "We're looking forward to smoother, more predictable SAP operations with outsourcing than we could have provided ourselves," says Ticona's Bockstedt. "Sure, there's a risk of losing touch. There's always the possibility that a relationship will sour. And, especially on such a long-term arrangement as SAP operations, after you've reached a certain point, it could be hard to recover if you decide to terminate [the relationship]. The solution is a strong partnership, which you forge and encourage in the trenches day to day." CIO

Senior Writer David Pearson can be reached at dpearson@cio.com.

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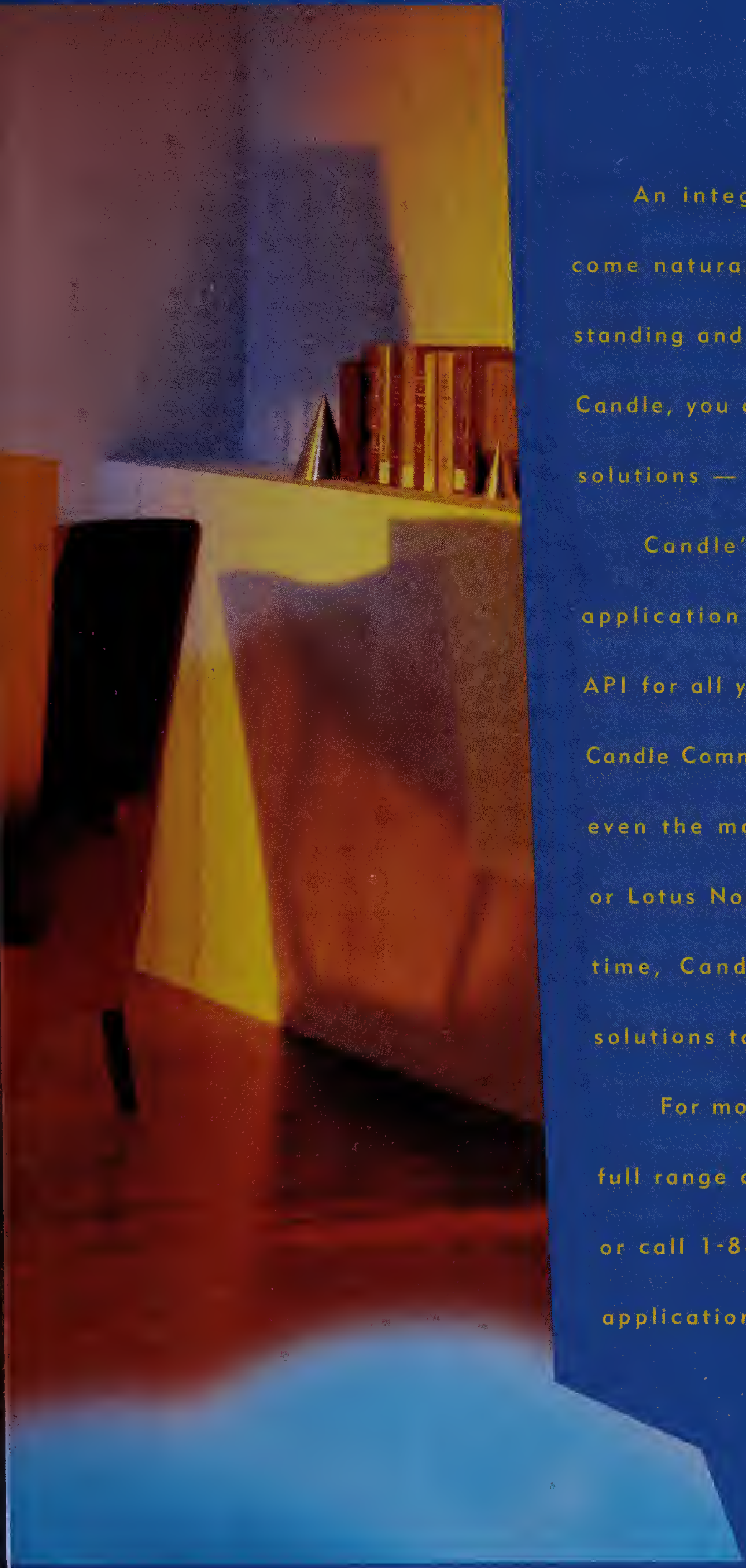

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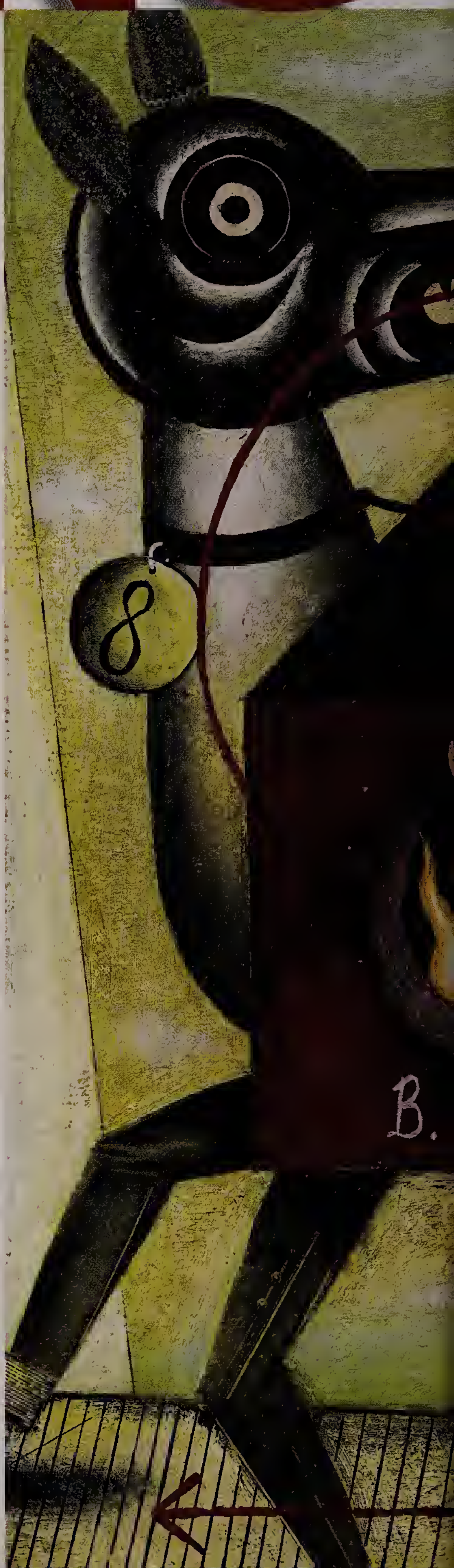


Reader ROI

AS THE ISSUES OF TOTAL COST of ownership move center stage, imaginative CIOs are finding new ways to battle its impact on their budgets. In this article, you'll learn

- What total cost of ownership really means
- Why standardization is an important issue
- How automation can reduce support costs
- How "thin clients" can impact TCO
- Why savvy CIOs are choosing to outsource support and acquisition processes

Managing infrastructure costs has moved to join other hot action items—Y2K and the skills shortage—on the CIO's growing list of concerns. Is there a limit to how low costs can go? Here's how to make sure your total cost of ownership is right for your business.

BY MALCOLM WHEATLEY

It **stands to reason:** In the end, your company's hardware and software cost a lot more than the purchase price alone. The price tag on a computer or software system has become an increasingly irrelevant indicator of what it really costs. Throw in things like support, maintenance and lost productivity due to time users spend figuring out how to operate them, and costs can skyrocket.

The annual—yes, annual—cost of a standard desktop PC, for example, can be more than five times its original purchase price. Reston, Va.-based management consultancy Compass America Inc. has determined that the cost of the average desktop PC amounts to $5,985.

GartnerGroup Inc.'s figures are substantially higher: about $11,000 for a Windows 3.1 desktop and $10,000 for a Windows 95 desktop. And although total cost of ownership (TCO), as the notion is called, is most closely associated with desktop computers, it can apply to any aspect of a business's IT infrastructure, including networks and enterprise servers.

Companies looking to reduce TCO—and frankly who isn't?—should begin by figuring out what their TCO is, says Bill Kirwin, Gartner's vice president and research director and the analyst credited with coining the term. Kirwin recommends taking Gartner estimates—or numbers from other sources—and refining them to suit your own circumstances.

A quick-and-dirty way of calculating TCO is simply to add all the costs associated with the IT resources in question and divide the answer by the number of those resources. "Achieving a four-digit ROI [on a specific project] can be a challenge, but there's a lot of low-hanging fruit out there," says Kirwin.

Most of that fruit, it turns out, is hanging from just two branches: the costs of supporting an IT investment and the costs that stem from a lack of standardization. Standardization may sound a lot less exciting than buying some fancy high-tech TCO-reducing piece of equipment, but experts like Kirwin figure there's no better way to staunch the flow of TCO dollars from your budget.

Truth is, the TCO of any piece of IT infrastructure varies from business to business, in part because of differences in frequency of problems and differences in the resources that companies make available to fix those problems. Below are some general rules to follow to make sure your costs are as low as they can be.

RULE 1 A standardized environment costs less to install and maintain than a heterogeneous one.

According to Norm Galloway, CIO of Lexington, Ky.-based Lexmark International, the printer manufacturer has derived huge benefits from a TCO strategy of ruthless standardization. The company incurs an annual TCO of $5,013 per computer for its U.S.-based PCs (for simplicity, European-based machines have been excluded from the calculation), although Galloway is quick to stress that he "doesn't claim that it's an apples-to-apples comparison with the Gartner methodology." Lexmark, says Galloway, won't develop applications but insists on buying standard, industry-leading products from major software vendors. Its networks are managed to open systems standards, and "every application must go onto the smallest platform on which it will fit," according to Galloway. Spending money on unused capacity, he figures, simply adds to Lexmark's TCO.

The policy has paid dividends. Thanks to a consistent desktop environment, training costs are very low. Time lost from employees tinkering with their machines is also low. "When we look at our users, we find it hard to see people spending

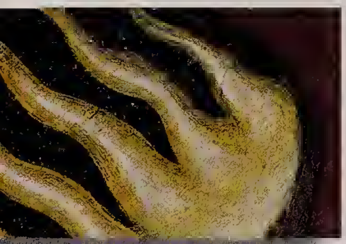
ILLUSTRATION BY CHRISTIAN NORTHEAST

more than an hour or two a week on what I call 'futzing time,'" he says.

Eighty people support the 7,500 PCs worldwide—"a very visible cost," he acknowledges, but one that experience has taught him is probably optimal for the moment. "Several years ago, we tried managing that figure to a lower level, but we realized that we were actually driving costs back in by not resolving problems fast enough." The result, he explains, was that "a few more support people were added," and user satisfaction statistics regained their former levels.

Confirmation came when Galloway deviated from this strategy in an attempt to supply cheaper PCs to users with less demanding needs—a break with the standardization policy "that really got us into trouble," says Galloway. Minor differences in the basic input/output system (BIOS) caused software installation and support problems, and the cheaper machines were ultimately ousted in favor of standard ones from a top-three supplier he won't name.

RULE 2 **Electronic software distribution ensures consistent software installation and eliminates the need to physically install software on each computer.**



At People's Bank, a $7.9 billion financial institution based in Bridgeport, Conn., the outsourcing of software installation to a third party wasn't working. The conclusion was inescapable, recalls Lena Zoghbi, vice president and manager of client/server infrastructure. "We didn't want to hire a lot of people, so we opted for electronic software distribution," she says.

As of March, some 2,000 workstations around the bank's branch network received their software updates electronically, "and by the end of the year, we'll be doing that for the entire bank," says Zoghbi, noting that the move roughly doubled the number of machines now receiving automatic software updates. "We've brought the annual cost of ownership per personal computer down to just under $5,000—including the cost of depreciation, infrastructure and the people to support the network," says Zoghbi.

RULE 3 **Use remote systems management tools to move software and data to and from laptops, as well as to store backup images of users' hard disks.**

Joe Federer, vice president of information systems at Atlanta-based healthcare services provider HBO & Co., has to keep more than 800 mobile sales representatives armed with laptop computers. With a standardized disk image on each machine and a standardized operating environment, HBO & Co.'s representatives dial in from hotels, homes and client offices all over the United States, uploading sales reports and downloading the latest competitive intelligence and product information. Any settings that users have changed get changed right back, says Federer, and any unauthorized software is deleted. Although each user is allowed a 50MB data area "for personal data, the rest we control," he says.

And, as important as remote systems management is, the contribution made by the backup disk images shouldn't be overlooked. "We do three or four saves a month," says Federer, describing how the company restores the disk image that was captured from a user's computer when he or she last logged in. Laptop damage, theft and virus attacks are the main reasons for resorting to the archived disk image. Once, Federer's own machine was stolen from his car. "Twenty minutes later, I'd gotten an exact copy, with the exact same images, from the super server," he says. It did not affect his business at all.

RULE 4 **Use automated technical support tools to reduce support personnel staff.**

GartnerGroup estimates that an organization with 1,000 network nodes averages 72 help desk calls per day, with each call costing between $22 and $41 to resolve. Reductions of up to 30 percent in support calls from such simple techniques as proactively spotting and resolving software conflicts quickly ratchets up savings of over $100,000 per year per 1,000 workstations, leading to an investment payback in just months.

That's certainly the experience of Tim Barnes, the Bethesda, Md.-based chief of the intramural technical systems branch of the National Institute of Allergy and Infectious Diseases at the National Institutes of Health. Scattered over six locations, the Institutes' 1,500 users run a mixture of Mac and PC workstations. "When we went from DOS to Windows 3.1, the amount of support required at the workstation dramatically increased," says Barnes, recalling the days when he used to support 350 users in a single building by himself. "Windows was a lot more complicated," he says, and with automated support tools the ratio dropped to between 100 and 125 users per support person—a figure that Barnes describes as "pretty good against the industry average."

Looking for a way to increase the number of users that a support person could handle, he spotted a copy of CyberMedia's FirstAid '97 in his local computer store and installed it on his home computer. Impressed, he called CyberMedia: Was there a network version? One was under development, the company responded, and Barnes signed up as a beta tester.

A pilot project of 20 machines that had been upgraded to Windows 95 found—and cleaned out—a lot of "garbage" from the replaced Windows 3.1 and brought about a minor increase in speed, says Barnes. It also fixed what he describes as "odd problems" such as instances of users double-clicking on icons and nothing happening.

While the proactive automatic fixes have certainly reduced the support workload, Barnes is most enthusiastic about the software's ability to allow support personnel to see what users have done to bring about the problem that prompted the help desk call. "You can see that they've downloaded stuff," he says, adding that the software is "going to save a lot of time once we roll it out. Obviously, we won't be reducing our [support] staff, but we will be able to release them to be reassigned to more important tasks."

RULE 5 **Consider replacing personal computers with "thin clients" such as network computers.**

That's the logic being pursued by John

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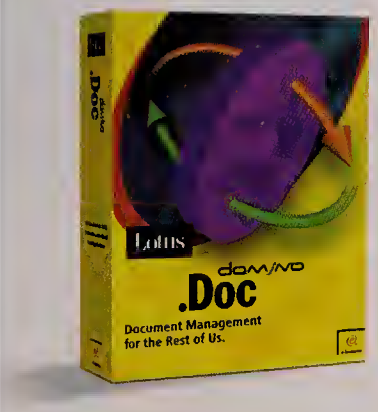

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Hnanicek, CIO of Wilsonville, Ore.-based Hollywood Entertainment Inc., the parent company of Hollywood Video. With the network computing bandwagon gathering speed, Hnanicek sees network computers as the ideal platform for a new Sequent-based sales management information system being rolled out to the company's 1,000-plus video stores and area managers.

After a pilot study in five stores, Hnanicek moved onto a larger pilot of 100 stores, aiming to study in detail the practical feasibility of network computers. "Our expectation is that the TCO regarding maintenance and support will be about half," he adds. "There's no complicated operating system, no hard drive. Instead, it's a tiny little box, about the size of a laptop, and with fewer parts."

RULE 6 Client/server technology offers another take on TCO, without the need to invest in network computers.

In 1996, Houston-based Omnes, a Schlumberger and Cable & Wireless joint venture specializing in delivering global communications services to multinational corporations, elected to implement a worldwide multicurrency accounting package that ran on Windows NT. The only problem: the cost associated with placing an NT server and workstation in each of the company's 52 locations around the globe.

Instead, explains Systems Manager Orette Brodrick, Omnes opted for thin-client technology that emulates an NT client at the desktop. "Users need very little bandwidth, as it's not transmitting bitmaps of the entire screen. There's no AS/400, no HP6000—just three Compaq ProLiant servers," says Brodrick. And support requirements are minimal, she adds. "You don't need a certified administrator. We can provide 24-hour coverage with just one-and-a-half people."

RULE 7 Use automated network management and monitoring systems to reduce the infrastructure costs of WANs.

David Anderson is supervisor of network operations and airline support at Atlanta-based Worldspan, a travel industry reservation network jointly owned by TWA, Delta and Northwest Airlines. According to Anderson, Worldspan's network nodes can be anything from mom-and-pop shops with one or two CRTs and a printer to business travel specialists with 400 to 500 CRTs that handle the travel business of Fortune 100 companies. Worldspan also handles the network management for TWA itself, Anderson adds, which has 1,500 network nodes around the globe.

In the past, says Anderson, the network support function placed heavy reliance on

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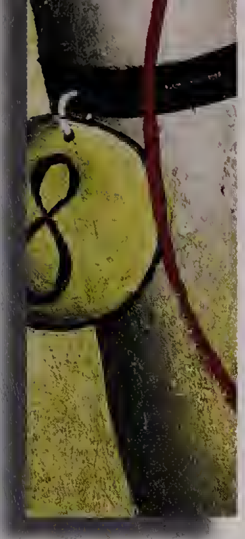

users telephoning in with problems. "We had a roomful of monitors and printers that we had to watch to spot alerts. Still, a lot of data [about problems on the network] was getting past us. We were 100 percent reactive." Automating the monitoring process meant that problems are reported on an exception basis, leaving technicians free to concentrate on fixing problems.

Consequently, Worldspan has been able to double the size of the network it manages to 9,000 network nodes globally while increasing the network support staff by only 35 percent, from 21 people to 27. Best of all, while the number of outages has been markedly reduced, the level of service has improved, with Worldspan's data center spotting network problems before customers report them. "The target for 1998 is to cut inbound telephone calls by 50 percent," says Anderson.

RULE 8 Outsourcing offers still another way to cut TCO.

At ServiceMaster in Downer's Grove, Ill., the management services division that supports hospitals, schools and industrial facilities has outsourced virtually all the TCO issues associated with the deployment of over 2,000 PCs running the company's management information system at client sites around the country, says Vice President of IS Doug Nies.

"It's a one-stop shop," he explains. Hartford Computer Group Inc. in Inverness, Ill., leases the PCs to ServiceMaster and is responsible for initial configuration customized to the requirements of the particular client site, maintenance, help desk support and the provision of some standard third-party office software. The arrangement is projected to save ServiceMaster half a million dollars in 1998, says Nies, who anticipates saving roughly twice that amount in the future. What's more, he says, Hartford Computer is also responsible for taking away all the old PCs—disposing of them in an EPA-approved manner, selling them, donating them to a school or breaking them up for spare parts as appropriate.

Imaginative? You bet. But in the war against the crippling grip of TCO on budgets, expect many more CIOs to emulate Nies's approach in the years ahead.

So there you have it: eight ways to lower your TCO. Are they the only rules? No. There are plenty of others—and new technologies are bringing new rules into play all the time. The real bottom line, however, is that many rules will follow the same logic: Standardize, then automate. CIOs looking for a strategy, as opposed to a lot of tactics, may find that idea useful. CIO

Malcolm Wheatley, a freelance writer in the United Kingdom, can be reached at malcolm_wheatley@compuserve.com.

War Games

Attacking the millennium bug calls for a prudent battle plan

BY SCOTT KIRSNER

CIOS START TALKING LIKE Patton when asked about the transition from 1999 to 2000. Talk of plans for the switchover is peppered with references to "shock troops," "war rooms," "readiness drills," "contingency plans" and the ever-popular "triage." Give 'em a cigar, and they're ready for battle.

The objective, of course, is a seamless segue to the 21st century, a business-as-usual "non-event," according to several Y2K program managers. To ensure reality matches those rosy scenarios, CIOs and their staffs are constructing intricate battle plans for the final months of 1999. They're guarding against recontamination by tracking the continued compliance of applications that have been fixed and tested, crafting contingency plans, putting together SWAT teams to handle unanticipated problems and conducting drills to gauge their Y2K readiness.

"Most people still believe that they're going to finish their applications on time and the transition will be fine," says Phil Carrai, president and COO of McCabe & Associates, a Columbia, Md., company that develops visualization and Y2K testing software. "But you need to start developing your plans now for how you're going to handle it. You can't circulate a memo about your plans for the transition on Dec. 15 of next year and expect everyone in your organization to absorb it."

Like any big event, the Y2K rollover requires preplanning, with preparations completed at various intervals during a 12-month period or more (kind of like planning a wedding, only less joyous). For better or worse, the first two days of the year 2000 are a Saturday and Sunday. A well-conceived battle plan will mean the difference between a celebration ringing in the new year or an unprecedented weekend from hell.

12 Months: Contingency Planning

Few CIOs and Y2K managers are willing to acknowledge the prospect that all their vital systems won't be ready by Dec. 31 of next year. As a result, they're likely to leave contingency planning until the last minute.

That's a mistake, says Carol Dow, Y2K program manager for the Vanguard Group in Valley Forge, Pa. "You need to have your contingency plans hashed out by the end of this year," she says. Why so early? Date-related failures are likely to occur long before 2000 arrives. And contingency plans, such as identifying an alternate vendor for an important product or service, can take months to implement.

Contingency planning should be a team activity, involving not only IT staffers but also representatives of each business unit, business continuity experts and attorneys. "You need all those people to help you understand what kind of failures can hurt you the most, what areas have the highest probability of failure and what your options are in dealing with those failures," says Chas Snyder, director of the Y2K project for Levi Strauss & Co.'s U.S. operations in San Francisco.

The contingency planning team

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needs to think about both kinds of Y2K failures: those caused by internal systems and those caused by external systems. If an internal system goes down, is there an older backup system? Snyder says that if Levi Strauss's EDI transactions falter, orders will be transmitted via fax, just as they were in the days before EDI. At another level, can the process somehow be handled manually? Can it be outsourced temporarily to a reliable provider?

Unfortunately, it will be harder to plan for external system failures. “We're most concerned about the things that aren't under our control,” says Dennis Grummer, director of the Century Compliance Project Office at Sears, Roebuck and Co. in Hoffman Estates, Ill. “What if we don't have power or phone service?” Grummer says that his company is working with trade associations like the National Retail Federation to get information from utilities about the status of their Y2K projects—and apply pressure if necessary. “There's strength in numbers,” he says. “You can stress the issue more when you get together with other members of your industry.”

Good contingency plans can't have only one level of “what ifs,” though. Barbra Reagor is the senior director for risk management solutions at Bellcore, a Morristown, N.J., software and service company that has helped telecommunications companies recover from bombings, earthquakes and floods. “You need to think deeply about your contingency plan,” she says. “How solid is your plan B? Go to your hotsite providers and backup service providers and ask, ‘What happens if all of your customers show up at your door on Jan. 1?’”

9 Months: Pollution Alert

Companies talk about being “done testing” by this summer and fall as though the early completion date were a goal in and of itself. But testing is never finished. Y2K managers are more concerned with what they call “continued recertification” and “compliance tracking” than ever. The danger is that once systems are tested and returned to production later this year and in 1999, they'll be recontaminated. That possibility is frightening.

Programmers adding new functionality or making additional fixes can introduce noncompliant routines, or external entities can send you bad data. Users can corrupt spreadsheet-based applications by using two-digit dates. Howard Rubin, president of the consulting firm Rubin Systems and chairman of the computer science department at Hunter College in New York City, says that half of all Y2K failure events will be caused by what he calls “systems pollution—injecting bad genetic material into an application.”

To avert such a situation, you must institute—or beef up—change management processes. Old habits die hard, and it's easy for programmers to forget about date standards (or windowing procedures) when working on newly compliant systems. “Look at all changes that get made and do a walk-through with the programmer who made them,” advises Ian Hayes, president of Clarity Consulting in Hamilton, Mass., and coauthor with William Ulrich of *The Year 2000 Software Crisis: The Continuing Challenge*. Hayes knows of a financial services company that has discovered 14 new date-related bugs in the 18 months since its compliant and supposedly remediated systems were put back into production. “There's a high likelihood that programming changes will reintroduce Y2K errors, and if you don't have a really good change management environment, you're vulnerable,” warns Hayes.

It's also important to watch for bad data coming in from outside sources. “You need to sit down with the subject matter experts and walk through every process,” says Jerry Hermes, consulting manager of Y2K solutions at application-development software vendor Micro Focus in Mountain View, Calif. “What happens if you get bad data at this point? How would you detect that, and what impact would it have?”

Companies should put controls in place to prevent employees from purchasing new products that aren't compliant. And they should be wary of buying products marketed as “Y2K ready” that don't live up to that billing, according to consultant Jerry Trognitz of International Consulting Services Inc. in Dallas. He also advises companies to try to limit the scope of new development in the months leading up to the transition. “You need man-

Publish or Perish

Prepare for some manual labor

AS THE NEW MILLENNIUM approaches, customers and business partners will all have questions about how your organization is going to handle the transition. The best advice for preventing that onslaught of inquiries from paralyzing the organization? Publish your battle plan. Everyone will feel better knowing that you've anticipated every contingency.

“We realize that our shareholders and institutional investors are going to become more concerned as 2000 approaches,” says Carol Dow, Y2K program manager at the Vanguard Group in Valley Forge, Pa. “Our goal is to alleviate those concerns upfront,” in part by including Y2K articles in its investor newsletter.

“We're constantly updating people on our status, so they can be reassured by that,” says Steven McManus, communications manager for BankBoston's Millennium team. “Test results should be out there, and people should know that you have contingency plans in place.”

There should also be a well-articulated process for handling Y2K questions. At many companies, front-line customer service personnel are instructed about how much information about Y2K they can give out before passing a questioner to more specialized personnel.

Such a coherent communications plan can help prevent unflattering publicity. *–S. Kirsner*

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agement support to do that," he says, "but it works wonders to limit the amount of recontamination you'll see."

Employees also need to undergo a shift in mind-set. Communicate the need to handle dates properly, with a "19" before the last two digits. "No one has really talked about the 'thinking' problem," says Jon Church, senior director of operations and Y2K program manager at Software AG Americas Inc., headquartered in Reston, Va. "Recontamination is still very real until people start putting 19s before their 98s."

6 Months: Assemble the SWAT Team

As the potential for unseen snafus increases, Y2K managers say that a reliable, rapid-response team should be ready.

"You need a SWAT team that's on call to handle any unanticipated problems during the transition," says Irene Dec, vice president of IS and corporate information technology and year 2000 program manager at The Prudential Insurance Co. of America in Roseland, N.J. "The team should include technical people, operations people and business people. You need the right blend of knowledge and skills so that the team can handle any kind of issue."

The SWAT team needs to have access to comprehensive documentation about the entire Y2K project. "What's my checklist of all the work that was done, and how much was each system tested?" asks Carrai. "How are these systems tied together, and who's responsible for what? What are the downstream effects if this system stays broken for a day or a week?"

To answer those sorts of questions, Prudential has established a database of all Y2K activity that includes project plans, contact names and technical alerts. "That entire package of information would be available on a second's notice to the SWAT team," says Dec.

SWAT team members also need to clearly understand the process for alerting senior executives about problems. "Decisions about contingency plans need to be made by executives in the business areas who can best determine the risks of damage to the business," says Hayes. "If you have a supply chain failure and you start running low on parts, how should you react? No IT person can make that decision alone."

Before time runs short, it's crucial to make sure that all of the most important SWAT team members are committed to working over the transition weekend. Hayes reports incredulously that the programmers' union at a major European airline has already decreed that none of its members will work overtime that weekend. It's the biggest party of the century, union officials reportedly said, so "plan around us—we're not working."

As the six-month mark rolls around, Y2K reporting needs to shift into high gear as well. "With 180 days left, you need to start managing your project team like a war room," says Rubin. "You're managing in real-time. You need day-by-day status tracking and bite-sized tasks with instant accountability.

One European programmers' union has already decreed that its members will not work overtime during the biggest party of the century.

3 Months: Readiness Drills

Even the best SWAT team can't be expected to execute a Y2K transition flawlessly without any practice. For that reason, many experts advise running "readiness drills" over the course of a weekend to simulate how the team would respond to a major system failure. What steps do they take to diagnose the problem? To minimize downstream effects? Is the team comfortable with using the Y2K documentation? Do members know who to call for decisions about contingency plans? Are they familiar with the plans themselves?

"You want to get your SWAT team in shape, although you hope that you won't need them," says Earl Todd, Y2K project manager at The Boeing Co.'s Rocketdyne division in Canoga Park, Calif. "You want a team that knows exactly where to look [for the causes of problems] and is familiar with the procedures for fixing them."

And the simulations can't begin too early, says Ulrich, president of the Tactical Strategy Group in Soquel, Calif. "Some companies have systems that will blow up next year," he claims. "You don't want to be taken by surprise."

Come next fall, the organization's awareness about Y2K should be at a peak. Employees at all levels should be on the lookout for any indications of date-related problems and should know who to contact. Help desks should be equipped to handle increased call volumes. Companies that operate on just-in-time principles might want to stock up on extra inventory. The SWAT team should be ready to swing into action, all IT staffers should be on call and contingency plans should be ready to go.

Happy New Year

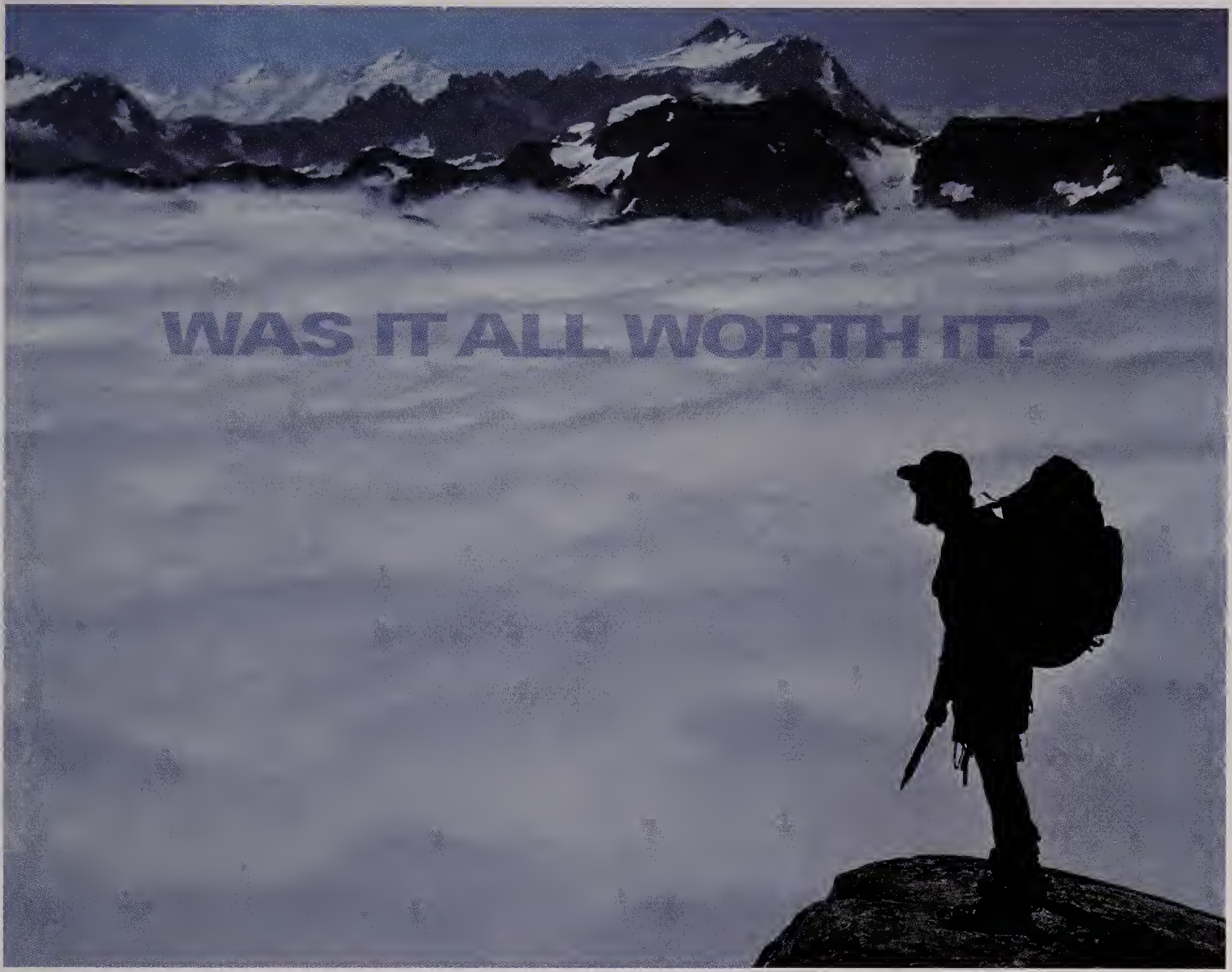
Your heightened level of awareness shouldn't dissipate once 2000 arrives. Expect problems to crop up throughout the year, especially around Feb. 29 (which appears in years ending in 00 only every 400 years), and month-end, quarter-end and year-end reports. "Your SWAT team needs to stay on call, your hotline and support numbers should stay open and everyone should know exactly what to do if there's an issue," says Prudential's Dec.

"A loss of data integrity could take days or weeks or months to recognize," says Snyder. "That's the scary thing. We're deploying all the resources we can to look for problems like that."

Some experts say that organizations will need to practice Y2K vigilance not just in 2000 but for several years afterward. "You need to be on guard the whole time you're undoing creative fixes and patches, dismantling contingency plans and taking down data bridges that you don't need anymore," Ulrich cautions. "That could last until 2005."

By then, CIOs and Y2K project managers will know whether it was their best-case scenarios or worst nightmares that played out. With luck, the battle fatigue you suffer can be easily cured by a nice vacation. CIO

Scott Kirsner, a Boston-based writer and consultant, is working on a series of articles for CIO *on the Y2K problem. He can be reached at* kirsner@worldnet.att.net.



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Edited by Howard Baldwin

Windows 98: Upgrade or Wait?

What the next version of Windows brings may not be enough to justify the cost

BY JOHN EDWARDS

ILLUSTRATION BY JAMES O'BRIEN

When Microsoft Windows 95 arrived in the summer of 1995, many CIOs knew they would be installing the enhanced operating system on their organizations' PCs sooner rather than later. The new product promised faster computing, an easier interface and improved networking. Now, with Windows 98 due to have arrived by the time you read this, the upgrade decision isn't nearly as straightforward. While the operating system promises increased speed and stability, improved peripheral support and the infamous integrated browser, an immediate need to upgrade their systems simply doesn't exist for many CIOs. Revealingly, Microsoft refused to supply the names of CIOs who were beta testing the new version.

The upgrade imperative, according to analysts, depends on how far along you are in your commitment to Windows. The further along you are, the less you need Windows 98.

What the Upgrade Brings

As anyone who follows Microsoft news knows, this version's biggest change is the integration of the Internet Explorer (IE) 4.0 browser. Although IE 4.0 is already available, it brings the Active Desktop interface, designed to bring Internet content directly to the screen and allow closer integration between data on the PC and data on the Internet. Even this is not a required shift, since users can turn it off and return to the familiar Windows interface if they want.

Active Desktop—though highly customizable—changes everything from the way folders and the desktop look to what happens when the user clicks the mouse. John Carpenter, director of computing for Georgetown University's School of Business in Washington, D.C., calls Active Desktop "a training disaster [that] we would turn off anyway." Carpenter is also concerned about Windows Update, a Web-based wizard that downloads and installs system software patches and drivers. "The last thing we want is people getting automatic upgrades. That would be a nightmare," he says.

IN THIS SECTION

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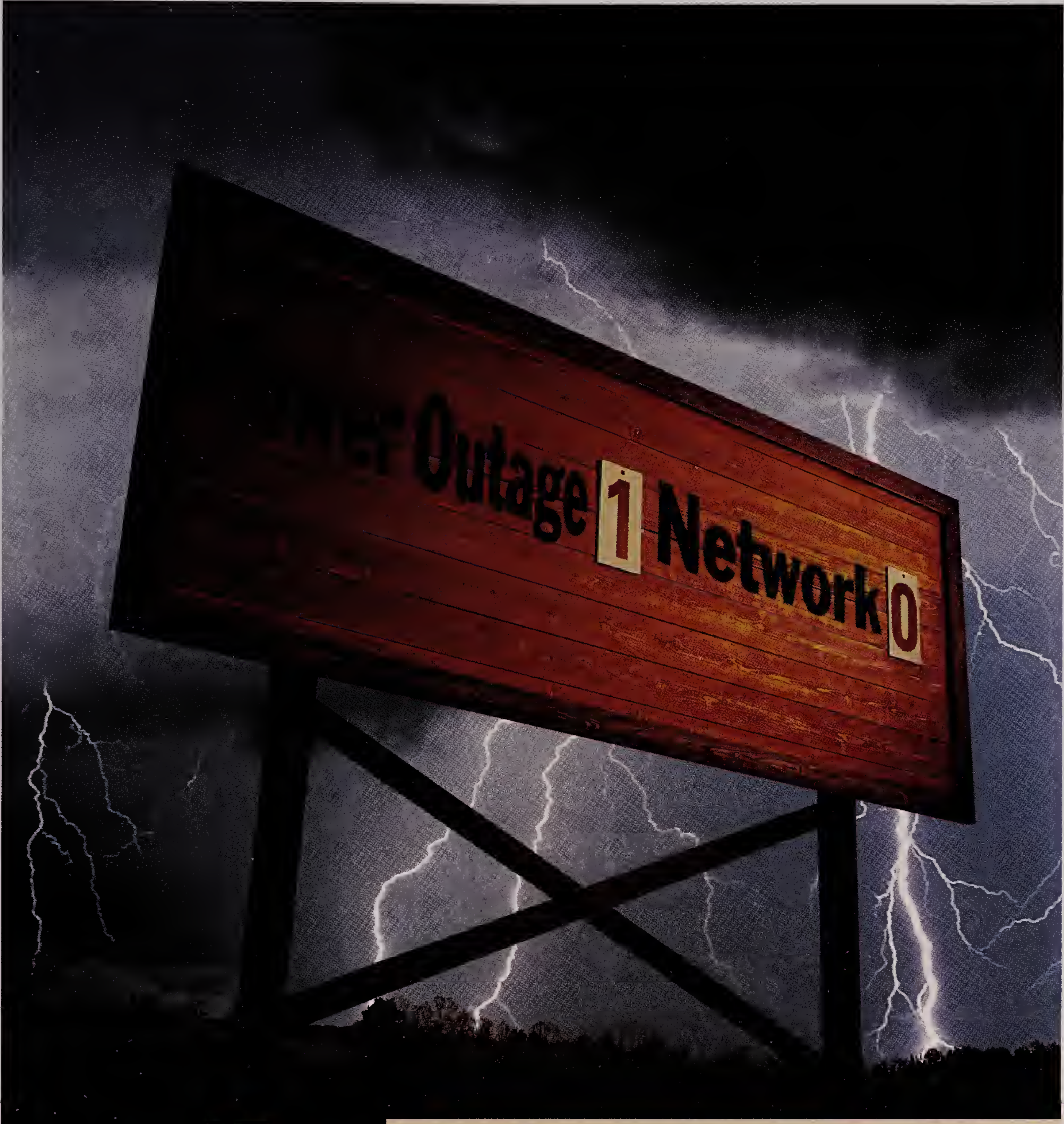
Other enhancements include faster launch and shutdown times, more than 1,200 new drivers for improved peripheral support, new trouble-shooting wizards and updated system tools for corporate support. While the last two features represent Microsoft's increased interest in the enterprise, analysts say the additions don't provide sufficient reason to undertake an immediate enterprisewide upgrade.

"The meat of Windows 98 is already in Windows 95, or can be easily added with software patches," insists Carl Howe, director of computing strategies for Forrester Research Inc. in Cambridge, Mass. He calls the rest—pardon the expression—"Windows dressing. It's nice to have, but certainly not imperative." Newly integrated features such as NetMeeting (Internet videoconferencing), Personal Web Server (PCs acting as a Web server), NetShow 2.0 (for playing multimedia content) and DirectX 5.0 (for accessing Web multimedia content) are fine for individuals with specific needs, but delivering them to everyone may be overkill. All of them are currently available as add-ons.



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A member of the BTR Group

CIOs thinking about moving to Windows 98 should be very clear on why they need to make the switch, adds Howe. Since there's nothing inherent in Windows 98 that will enable new kinds of applications, most organizations with desktops based on Windows 95 are fully prepared to support current and near-term software applications and don't need to adopt the updated operating system.

Similarly, if you're running custom applications designed for Windows 3.1, OS/2 or Unix, "you're probably not going to get much from Windows 98," says Dan Kusnetzky, director of operating environment research at International Data Corp. (IDC) in Framingham, Mass. (a sister company to *CIO*). It simply doesn't offer enough advantages to warrant the cost of rewriting older applications. "If you didn't change your application base for Windows 95, you won't want to change it for Windows 98," he notes.

Picking up the Pieces

Not everyone concurs about staying with Windows 95. Rob Enderle, area director at research firm Giga Information Group's Santa Clara, Calif., office, believes that Microsoft's piecemeal Windows development strategy has made Windows 98 a "must have" product for many organizations. "Let's be honest, Windows 98 is really the first maintenance release for Windows 95," he says, noting that during the past three years, CIOs have been forced to endure two Windows 95 service releases and an array of patches and driver updates. "That has turned a lot of companies into a mess in terms of what software is running on each individual desktop. It's been a management nightmare."

In Enderle's view, Windows 98 will allow organizations to regain control over their desktops by standardizing the systems on a single, stable product "rather than something that's [been] kludged together over the years."

Not surprisingly, Shawn Sanford, Microsoft's product manager for desktop operating systems, agrees, saying that Windows 98 marks "a compelling upgrade to Windows 95." He cites the product's speedier performance, increased reliability and strengthened hardware support as reasons for upgrading.

But Sanford also admits that Windows 98 isn't a breakthrough product in the same vein as Windows 95. As a result, he notes it may fail to meet the expectations of some users. "Windows 98 represents a ton of fine-tuning. The pitfall is if the user expects all kinds of new architectural things," says Sanford, citing the added TCP/IP support provided in Windows 95. "These kinds of features simply aren't provided by Windows 98."

Ultimately, the most compelling upgrade scenario is for those still running Windows 3.1. "If you're still in a Windows 3.1 environment, the smoothest transition to the 32-bit Windows world is going to be via Windows 98," says Michael Gartenberg, research director for GartnerGroup Inc. in Stamford, Conn.

On the downside, be prepared for some sticker shock. You're still going to have to deal with the hardware upgrades

Say No to 98

Think about skipping this upgrade and tackling Windows NT

SEVERAL INDUSTRY OBSERVERS suggest that CIOs forget about Windows 98 and instead move their enterprise desktops to Windows NT 4.0, Microsoft's high-end operating system aimed at workstations and servers. Microsoft Product Manager for Desktop Operating Systems Shawn Sanford says he "definitely recommends" Windows NT for organizations with PCs that meet the operating system's more stringent hardware requirements.

Windows NT is most suitable for organizations with PCs using Pentium or Pentium II processors and containing at least 2GB of storage capacity and 32MB of memory. "The exceptions are businesses that rely on DOS-based programs or hardware that's not compatible with Windows NT," Sanford says.

But GartnerGroup Inc. Analyst Michael Gartenberg advises that companies steer clear of immediately implementing Windows NT, despite the operating system's strong performance and security advantages. "An organization coming from Windows 3.1 to the 32-bit world will find itself paying an average 32 percent to 47 percent more to get there with Windows NT 4.0 over Windows 98," Gartenberg estimates. The increased expense includes the operating system's $319 price tag, the cost of providing beefed-up PC hardware and additional training. He adds that the average desktop user doesn't need Windows NT's added robustness.

Similarly, Gartenberg does not recommend that CIOs currently basing their desktops on Windows 95 switch to Windows NT 4.0. Instead, he says, they may want to take a close look at Windows NT 5.0 when the product becomes available around the middle of next year. According to Gartenberg, Windows NT 5.0 will offer improved (though not perfect) plug-and-play capabilities for peripherals, remote access and other features that are currently found in Windows 95 and Windows 98 but not in Windows NT 4.0. "This makes Windows NT 5.0 a natural upgrade path for enterprise Windows 95 users who need greater capability in their OS platform," he says.

John Carpenter, director of computing for Georgetown University's School of Business, is one CIO who plans to skip Windows 98 and wait for the arrival of Windows NT 5.0. "We're on a two-year PC replacement cycle and we update the operating system at least that frequently. But upgrading to Windows 98, and then Windows NT 5.0 several months later—that's just too much to ask our users and support staff to handle."

–J. Edwards

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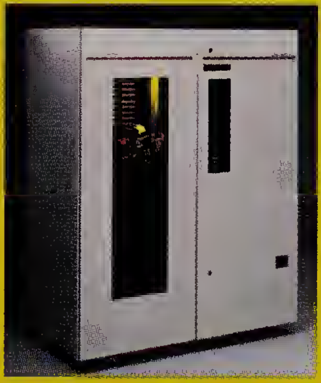

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that you postponed by staying with Windows 3.1. "If you're running Windows 3.1, that probably means you're using a high-end 386 or low-end 486 PC with limited memory and limited storage compared to today's machines," says IDC's Kusnetzky. The machines alone in today's market will run you at least $1,000 each. But that's only part of the cost involved in upgrading.

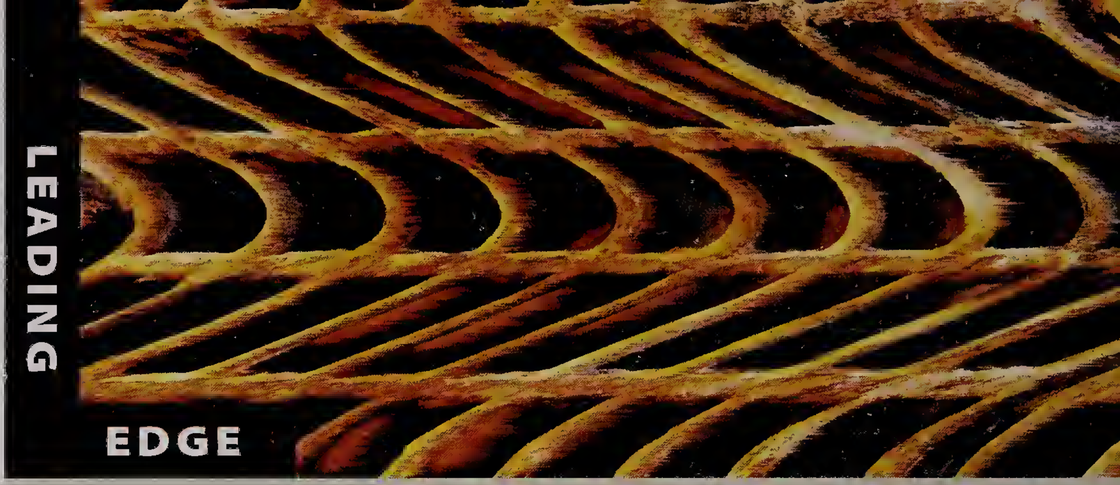
Like Windows 95, the new version runs on a 486 or Pentium processor, but it requires 16MB of RAM instead of the 8MB minimum requirement for Windows 95. You'll need a larger disk drive, too: Depending on compression and configuration, Windows 95 consumes up to 80MB versus up to twice that much for Windows 98. One feature may help in this regard, though. The new file converter system included with Windows 98 reclaims disk space, according to Jesse Berst, editorial director of ZDnet's AnchorDesk. Although the amount of disk space recovered varies from system to system, a savings of up to 50MB is not unusual on a PC that was already equipped with Internet Explorer 4.0 and the various Windows 95 patches and add-ons Microsoft has issued over the years.

One former CIO recently recounted that his company spent some $90 million to upgrade 55,000 PCs to Windows 95—about $1,800 per seat. Experts estimate the move to Windows 98 will be about the same. "The real expense lies in support, administration and training," says Berst. "That can easily run as high as $1,000 to $2,000 per computer." That's a healthy investment for a maintenance upgrade.

After all that, the price of the upgrade is almost incidental. Officially, Microsoft is quoting the price of Windows 98 at $109 for each PC currently equipped with Windows 95 or 3.1, compared with the $90 price of Windows 95. However, some trade press reports peg the price as low as $25.

Taking Control of the Desktop

For CIOs who have decided to defer a Windows 98 upgrade, there may be some stumbling blocks. Kusnetzky believes that the tightly integrated browser may be a problem for companies that have already standardized on Netscape Navigator. "Despite what Microsoft publicly claims, with Windows 98 you can't easily separate Internet Explorer from the operating systems," he says. Besides wasting storage space on PCs that are already equipped with alternate tools, Internet Explorer has the potential to tangle an organization's support strategy. "How are you going to keep people from using Internet Explorer, and demanding support for the product, when it's sitting on their PC?" he asks.



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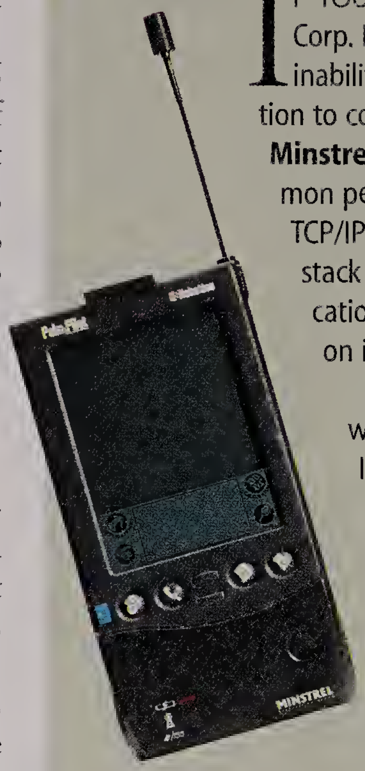
The Pilot Goes Wireless



IF YOUR SALESPEOPLE ARE RUNNING AROUND with 3Com Corp. PalmPilots but find themselves stopped short by the inability to download information at will, there's a new solution to consider. Novatel Wireless Inc. has developed the **Minstrel** wireless modem to work with the increasingly common personal digital assistant. The Minstrel modem features a TCP/IP stack that can be used in conjunction with the TCP/IP stack in the PalmPilot, so you can start doing custom application development for your road warriors who are insisting on instant access.

At the same time, Reuters America Inc., in conjunction with wireless integrator Aether Technologies International LCC, has announced the availability of its MarketClip service, which gives PalmPilot users unlimited access to financial information such as stock quotes, market summaries, volume and price alerts and news headlines. The MarketClip service is available for a flat monthly fee of $115.

The Minstrel modem costs $399, not including any required activation fees. For more information, call 619 784-0620 or visit *www.novatelwireless.com.*

More Cobol Tools? You Bet!

YOU AND A LOT OF OTHER PEOPLE EXPECTED COBOL to be dead by now, but it's exhibiting more resiliency than cockroaches after a nuclear holocaust. That's why Acucorp, Inc. (formerly known as Acucobol) is still upgrading its products. Its **Acucobol-GT 4.0** compiler now comes with a Web browser plug-in that lets customers and employees access Cobol applications through a traditional Web browser. Programmers simply embed the Acucobol-GT application on their Web page, using either a hyperlink or HTML. Users with the plug-in installed on their Windows 95 or NT client can go to that page and access the embedded program.

Version 4.0 also includes new Cobol syntax to simplify common gateway interface program development, independent windows that can be minimized separately and overlaid by other windows and expanded menu and window applications. Acucobol-GT runs on Windows, Windows NT, OpenVMS and a variety of Unix platforms. Pricing for the new version starts at $1,250; licensing fees for the Web plug-in vary depending on usage.

The new version is also available as part of a product suite that includes AcuBench, an integrated development environment for Cobol; AcuConnect, an application server for remote access; Acu4GL, for access to relational and ODBC-compliant databases; AcuServer, for network file system support; and AcuODBC, for accessing information stored in productivity applications like Microsoft Word, Excel and Access. The Version 4.0 Professional Edition product suite costs $10,100; the Version 4.0 Client/Server Edition product suite costs $7,000. For more information, call 619 689-4500 or visit *www.acucorp.com.*

Another challenge will be fending off end users' pleas for the updated operating system. Georgetown University's Carpenter, for one, feels his hand being forced. "The kids expect the latest and greatest thing, and they don't want to hear that the latest Windows upgrade isn't available on our network. If Bill Gates is slapping it on all the new computers, and our students are buying these computers, then we're expected to follow."

That reaction may be just as prevalent in the enterprise, suggests Gartenberg. During the coming months, users will be inundated with marketing inducements from Microsoft, independent software vendors, original equipment manufacturers and the media. "The IS organization needs to seize control of the migration by communicating with and educating business unit managers and end users," he says. "If you don't, you will cede control to Microsoft and the end users, and be left to pick up the pieces." CIO

Mt. Laurel, N.J.-based freelance writer John Edwards can be reached at edwords@prodigy.net.

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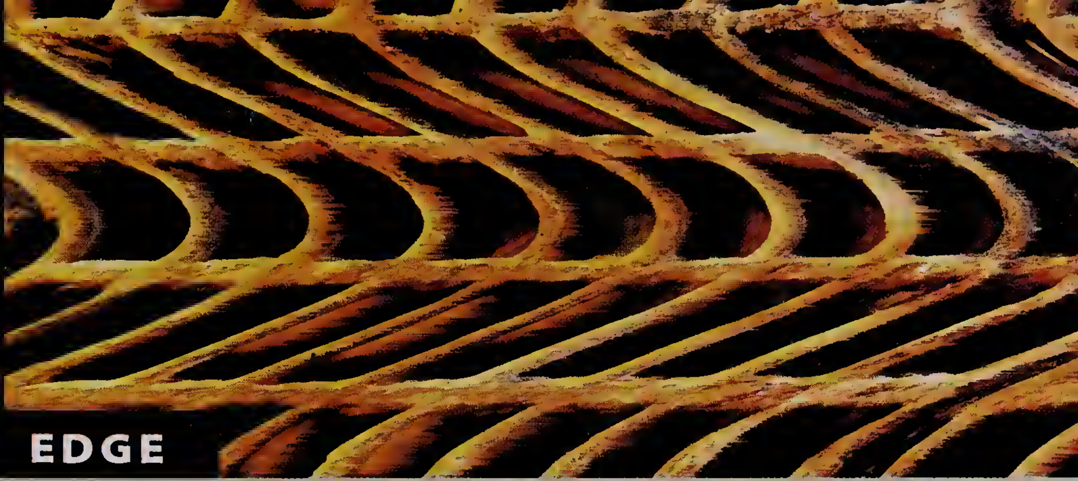

Telephony Meets Open Systems

SLOWLY BUT SURELY, the telephony industry is moving away from proprietary hardware. As part of this trend, Rockwell's Electronic Commerce Division has created **Transcend,** a customer call management application based on its previously available Spectrum software. Unlike Spectrum, which runs on Rockwell's proprietary PBXs, Transcend runs on an Intel Corp.-based server using the Windows NT operating system and Oracle Corp.'s Universal Data Server database.

According to Rockwell, Transcend is designed to separate application, switching, reporting and call handing functions for ease of integration with existing IT infrastructures and telephone systems. For now, the software is targeted at small or departmental call centers with a maximum of 80 operators or customer service folks. Included with the software are 70 report templates and the ability to assess call center productivity and allocate resources as efficiently as possible.

Pricing is yet to be determined. For more information, call 800 416-8199 or visit *www.ecd.rockwell.com.*

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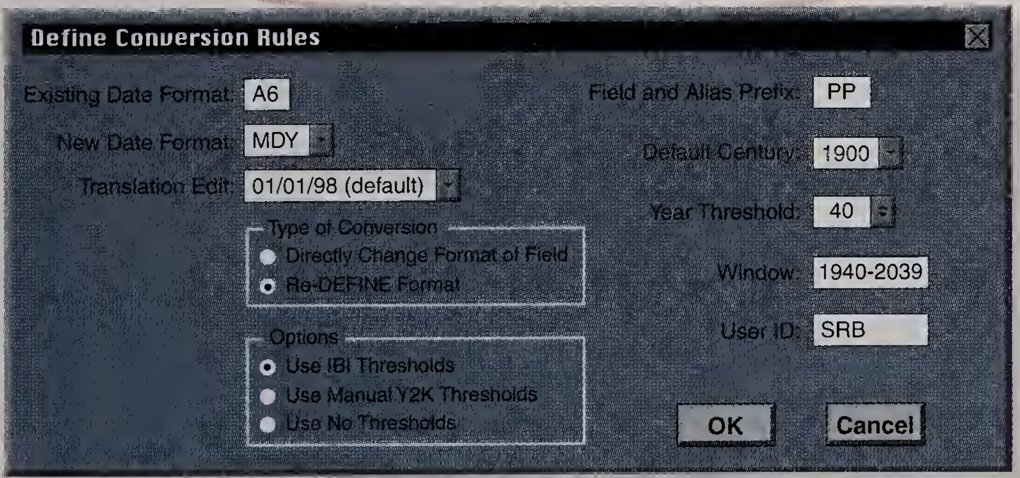

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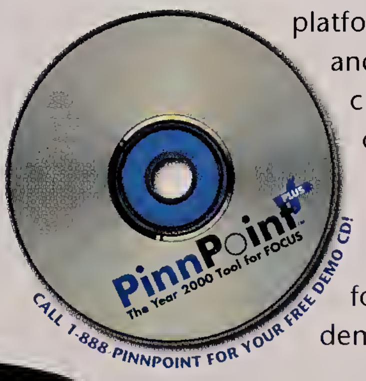
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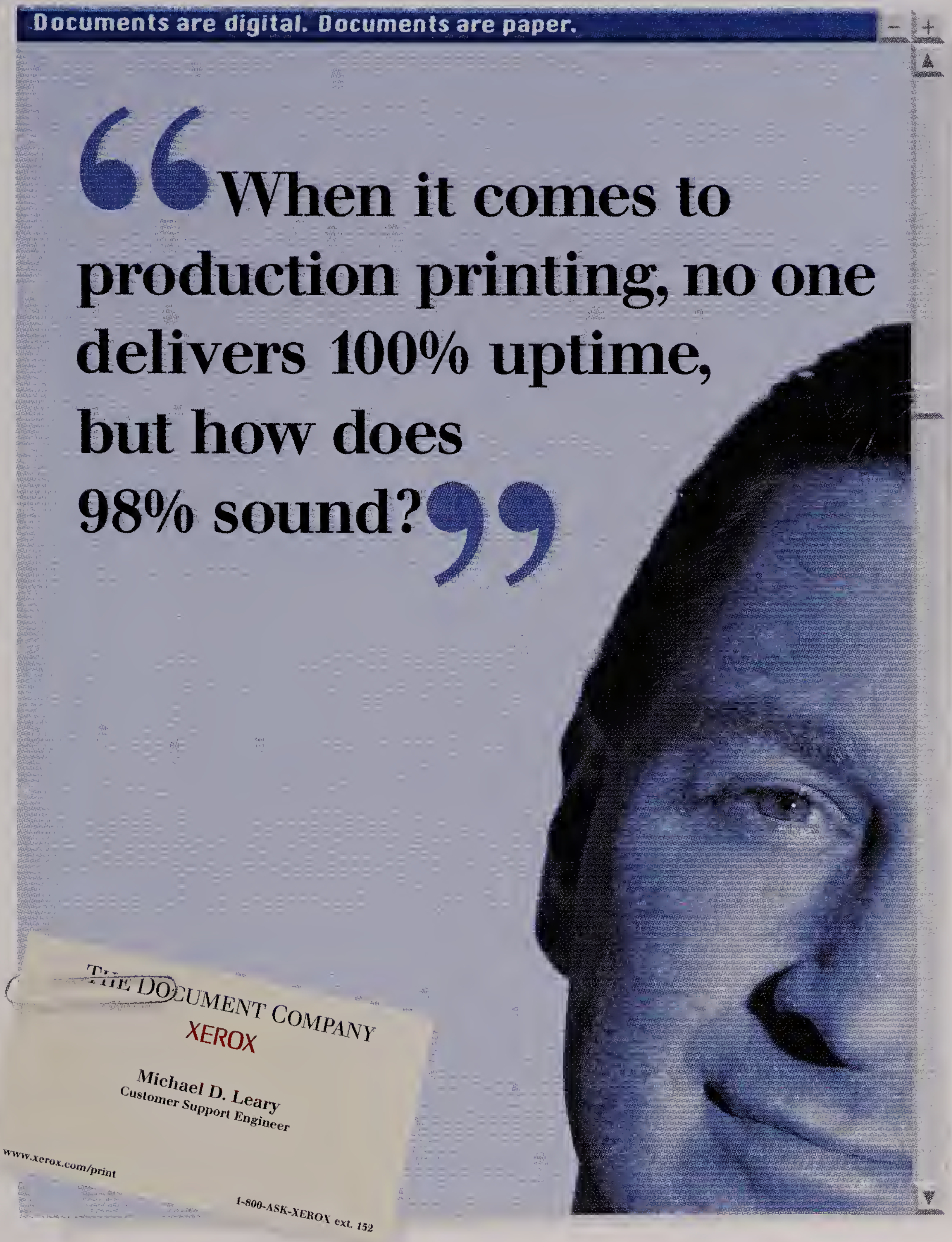
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ShopTalk

Goodyear's Debra Walker on Leveraging Business-Side Experience in IS

PHOTO BY JOE HARRISON

CIO: Why did Goodyear decide to move you from the retail group to an IS position?
One of the reasons I was selected is because I'm kind of a hybrid person who has a natural affinity for IT in addition to business experience. I had a track record of using IT successfully to achieve business objectives. But even with that natural affinity, I had a lot to learn.

How did you go about making the transition?
I've spent the last year taking advantage of a lot of opportunities for self-education. I've found that suppliers are more than willing to put together customized training sessions to help me learn more about things I'm interested in.

When you moved from the business side into the role of CIO what were your major goals?
My assignment from the CEO was to find a way to use IT to create competitive advantage for Goodyear. As a department, IS talks about the three levels that we need to work on all the time. The base level is providing a solid, dependable infrastructure for the organization. The second level, which builds on that, is providing excellent customer service. If we achieve those two things, then we get the credibility that allows us to play in the third level: partnering with the business to do the very high value-added activities and create competitive advantage.

Spotlight On:

Debra M. Walker, *vice president and CIO, The Goodyear Tire & Rubber Co., Akron, Ohio*

- **Line of Business** Manufacturing
- **Bio** An 18-year employee of Goodyear, recently transferred from the business side of the company to take over the IS organization
- **Day to Day** Oversees company's IS organization and is key member of senior management team
- **Challenges** Leveraging her business experience as she leads IS through a transformation to a shared-services organization

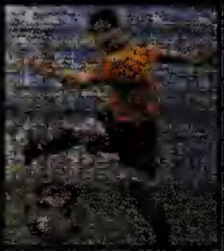
What have you accomplished so far?
So far, much of our work has been assessing the situation and describing the IT service model that will help us best address the issues in the current organization and the opportunities available to us. Having gone through that process, we've decided that a shared-services model is the best approach. What we're working on right now is actually creating that organization.

How have you integrated the IS department with the business side?
We've gone through the pattern [with IS] that most companies have. We started out centralized back in the mainframe days. We were very efficient and very reliable, but not responsive enough to the business. Then we went to the opposite end of the continuum and became highly decentralized. We were more integrated with the business but developed a lot of inefficiencies because of duplication of effort. Now what we're doing is moving back toward the center, where we get the benefits of the prior models and minimize the negative aspects. A big part of the communications challenge is explaining [to people throughout the company] that shared services is not a centralized IT organization, because people tend to look at [shared services] and say, "We tried that years ago, and it didn't work."

What advice do you offer other executives moving from the business side to IS?
You have to have a personal tolerance for not knowing everything. You spend your first six months developing vocabulary because there are so many acronyms. Once you get the vocabulary down, you can move to the next level of understanding, which is really getting the concepts.

There is a steep learning curve here. For people who have spent many years doing things they have a lot of experience in—things they are comfortable with and in which they see themselves as experts—moving into an area where they can't possibly be experts can be a tough transition.

–Tom Field



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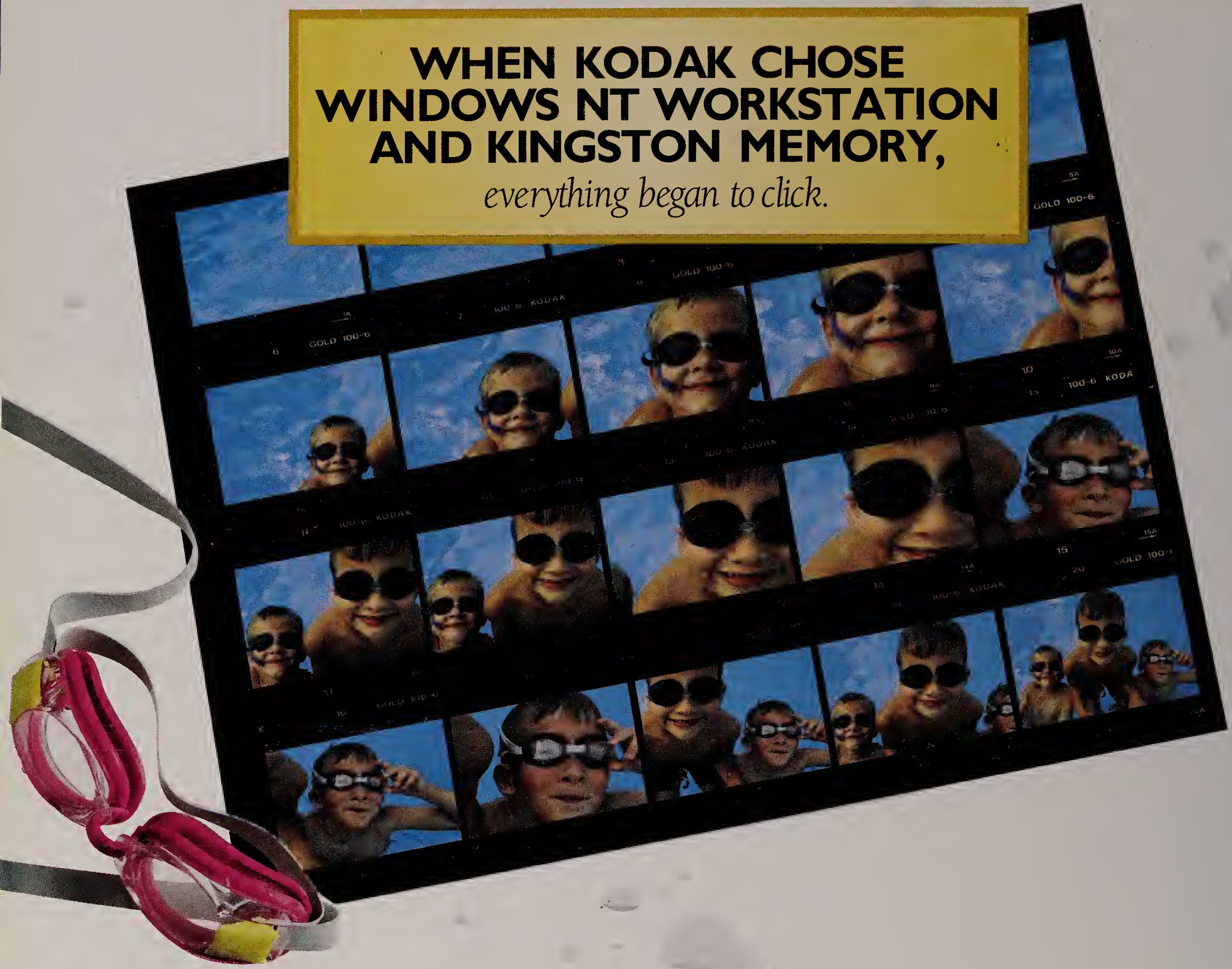

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